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## 1998 Annual Report

Michigan Agricultural Experiment Station

Michigan State University

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# 1998 *Annual Report*



## **Michigan Agricultural Experiment Station**

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Michigan State University  
East Lansing, MI 48824-1039  
517-355-0123  
[maesdir@pilot.msu.edu](mailto:maesdir@pilot.msu.edu)  
<http://www.maes.msu.edu>

Report prepared under the direction of J. Ian Gray, director of the Michigan Agricultural Experiment Station,  
and Debbie McCaffrey, administrative assistant.

Design by Christine Altese; editing and production by Jamie DePolo, MAES information officer, Outreach Communications.

All illustrative photographs by Kurt Stepnitz, MSU photographer, except as noted.

Dairy cow photograph on cover by Bruce Fox.

All chairperson photographs by Harley Seeley, MSU photographer.

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# 1998

## *Research that enhances the state's economy, environment and quality of life*

The Michigan Agricultural Experiment Station at Michigan State University takes pride in the role it played in advancing agricultural, natural resources and social and behavioral research in 1998.

- The MAES budget continues to be directed by strategic planning and allowed for a productive year.
- Project GREEN (Generating Research and Extension to meet Economic and Environmental Needs), the MSU plan to address long-term research and extension needs in the Michigan plant industries, received \$5 million in funding from the state. The Plant Coalition — made up of representatives from MSU, the plant industries and state government — is reviewing a proposed budget and developing calls for research proposals. The Plant Coalition has three standing committees focusing on various areas of plant agriculture: production agriculture and food safety, value-added and the basic plant sciences. Each area will receive a portion of the funding. Some new positions will be funded through GREEN, including crop integrators, MSUE Area of Expertise agents and diagnosticians. Seventy-five percent of the funding will be used to support programs to benefit the state's plant industries.

Larry Olsen, interim assistant vice provost and associate director of the MAES and MSU Extension, was appointed facilitator of the Plant Coalition. Olsen's new role is to further the goals of the Plant Coalition, which are to sustain and create economic opportunities for Michigan's plant industries; to advance environmentally sound agriculture and ensure food safety; and to enhance excellence in the plant sciences at MSU. He will continue to coach the plant-based Area of Expertise teams, as well as serve as the North Central Pesticide Impact Assessment Programs coordinator and help coordinate the research agenda of selected plant commodity groups.

The Director's Action Team (DAT), a subgroup of the Plant Coalition, is responsible for much of the daily decision making involved with Project GREEN. DAT members are Olsen; Gale Arent, associate director of MSU Extension; Keith Creagh, deputy director of the Michigan Department of Agriculture; and Jim Flore, MAES horticultural researcher. Flore has provided valuable leadership to GREEN, and the MAES appreciates his efforts on its behalf.

- The MAES is conducting a national search for an associate director. Gale Arent, MSUE southwest regional director, was named assistant vice provost/associate director of MSUE for four years. The MAES welcomes him and looks forward to continuing to work closely with MSUE.



Dr. J. Ian Gray

- To promote excellence in the plant sciences at MSU, the MAES is working in conjunction with Provost Lou Anna K. Simon to fund four new positions in several departments. Both MAES and non-MAES scientists worked together to identify key areas, and the new positions will strengthen these. The program also includes new scholarships designed to recruit outstanding graduate students in the plant sciences to MSU. Funding from the provost has been key in developing this plan.
- To promote excellence in animal breeding and genetics at MSU, the MAES commissioned a white paper by W. Richard Dukelow, animal science researcher, and Kim Scribner, fisheries and wildlife researcher. The MAES will be using this paper to analyze and develop strengths in these areas and to provide direction to the disciplines.
- The National Food Safety and Toxicology Center is developing a major program in microbial food safety. The MAES has allocated \$250,000 per year for five years to encourage and enhance programs in this area on campus. These funds are being administered by Edward Mather, deputy director of the center and quarter-time MAES assistant director. The "Comparative Risk in Food Safety: The Future Direction for Risk Analysis" conference held at MSU in June was part of this effort.
- Following a pattern of success established by the coalitions created around Michigan's plant and animal industries, the MAES, MSUE, the Office of the Provost and the Institute for Children, Youth and Families have created the Coalition for Children, Youth, Families and Communities (CYFC) to give communities access to research results quickly and easily.

The CYFC Coalition was created to stimulate, facilitate and coordinate MSU's research and outreach efforts related to the health and well-being of children, youth and families; to support and develop the capacity of



Michigan communities to meet their own needs; and to encourage new directions in scholarship and new applications for problem solving.

The Coalition for CYFC's co-directors are Marguerite Barratt, director of the Institute for Children Youth and Families; Cheri Booth, MSUE associate director; and Jan Bokemeier, assistant director of the MAES and sociology researcher. The MAES looks forward to working closely with Barratt and Booth to achieve the coalition's goals.

- Five, three-year disciplinary grants were funded in 1998. A disciplinary grant program in social and behavioral sciences will begin in 1999.
- The MAES is working to establish a relationship with the Scottish Agricultural College. The two institutions have similar missions and will be able to take advantage of each other's expertise by working collaboratively.
- The Cooperative State Research, Education and Extension Service (CSREES) completed its review of the MSU rural sociology program in 1998 and offered recommendations on how to strengthen it. The departments of Food Science and Human Nutrition, Botany and Plant Pathology, and Animal Science will be reviewed in 1999. The reviews are important as we prepare departments to meet the challenges of the next decade and are used for position planning.
- The MAES enjoys a strong and productive working relationship with many commodity and processor groups and government agencies. The Partnership for Ecosystem Research and Management (PERM) — a joint operating agreement between the MSU departments of Fisheries and Wildlife, Sociology, Geography, and Forestry, and the Michigan Department of Natural Resources Fisheries and Wildlife and Great Lakes Fishery divisions, continues to flourish.

The MAES is working closely with the Michigan Department of Agriculture on the Food Quality Protection Act. In addition, money allocated to Project GREEN is being used to fund two positions at the MDA.

- Lindon Robison, an MSU faculty member since 1977, was chosen to participate in the national administrative leadership development course sponsored by the Experiment Station Committee on Organization and Policy (ESCOP) and the Academic Program Committee on Organization and Policy (ACOP). His leadership

project revolves around the concept of social capital. During his internship, Robison will be working on several new initiatives — one is the social capital initiative that he was instrumental in organizing. While he is using this internship to learn more about the USDA and the MAES, we will benefit from his expertise and insights as well.

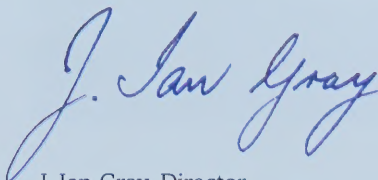
- In 1998, the MAES jumped on the information super-highway and unveiled a new Web site. The address is <<http://www.maes.msu.edu>>. The site contains a searchable database of all MAES projects that are on the CRIS system in Washington, D.C. The database can be searched by researcher name, key word or project number and will allow users to view the projects' objectives and annual progress reports.

Through the site, researchers can access calls for proposals and request an e-mail notification whenever that page is updated. There are also pages devoted to outlying field research stations, including a map and links to individual station pages, as well as links to commodity groups and other agricultural and natural resources organizations. Users may also look at copies of *Futures*, the quarterly magazine of the MAES, and *Messenger*, the monthly newsletter for MAES scientists.

The site is overseen by Joshua Wease, the new MAES Web editor. Before starting with the MAES, Wease worked for two years creating Web pages for the MSU Library.

- In 1998, former MAES director Robert Gast officially retired from MSU. The MAES benefited tremendously from his leadership and we wish him and his wife, Mary Lou, a long and happy retirement.

1999, like each new year, will bring a fresh set of challenges and opportunities. By helping agricultural, natural resources, and social and behavioral sciences identify their strengths and constraints to growth, the Michigan Agricultural Experiment Station is poised to assist them to be competitive and thrive in the next century.



J. Ian Gray, Director  
Michigan Agricultural Experiment Station



# Michigan Agricultural Experiment Station

As of 10-1-98

**J. Ian Gray**, Associate Vice Provost and Director

**Janet L. Bokemeier**, Assistant Director

**Edward C. Mather**, Assistant Director

**Doreen K. Woodward**, Assistant Director

**Debbie McCaffrey**, Administrative Assistant

**Linda Haubert**, Support Staff

**Nan Judy**, Support Staff

**Martha Lovejoy**, Support Staff

**Isidra Pérez**, Support Staff



## MATES Affiliated Deans

As of 10-1-98

**Fred L. Poston**, Vice Provost and Dean  
College of Agriculture and Natural Resources

**Julia R. Miller**, Dean  
College of Human Ecology

**George E. Leroi**, Dean  
College of Natural Science

**Kenneth E. Corey**, Dean  
College of Social Science

**Lonnie J. King**, Dean  
College of Veterinary Medicine

# MAES Unit Administrators

(Units receiving base funding)

As of 10-1-98

**Kirk L. Heinze**, Acting Chairperson  
Agricultural and Extension Education

**Larry G. Hamm**, Chairperson  
Agricultural Economics

**Ajit K. Srivastava**, Chairperson  
Agricultural Engineering

**Maynard G. Hogberg**, Chairperson  
Animal Science

**William L. Smith**, Chairperson  
Biochemistry

**Gustaaf A. de Zoeten**, Chairperson  
Botany and Plant Pathology

**Boyd G. Ellis**, Chairperson  
Crop and Soil Sciences

**Stanley L. Flegler**, Acting Director  
Center for Electron Optics

**Edward J. Grafius**, Chairperson  
Entomology

**Marjorie J. Kostelnik**, Chairperson  
Family and Child Ecology

**William W. Taylor**, Chairperson  
Fisheries and Wildlife

**Mark A. Uebersax**, Chairperson  
Food Science and Human Nutrition

**Daniel E. Keathley**, Chairperson  
Forestry

**René C. Hinojosa**, Chairperson  
Geography

**Wayne H. Loescher**, Chairperson  
Horticulture

**Dana G. Stewart**, Chairperson  
Human Environment and Design

**Michael J. Klug**, Director  
Kellogg Biological Station

**C. Gerald Haarer**, Director  
Land Management

**Frederik J. Derksen**, Chairperson  
Large Animal Clinical Sciences

**Jerry B. Dodgson**, Chairperson  
Microbiology

**Robert M. Hollingworth**, Director  
National Food Safety and Toxicology Center

**Bruce R. Harte**, Director  
School of Packaging

**Joseph D. Fridgen**, Chairperson  
Park, Recreation and Tourism Resources

**Willie M. Reed**, Interim Chairperson  
Pathology

**Mark E. Whalon**, Acting Director  
Pesticide Research Center

**William S. Spielman**, Chairperson  
Physiology

**Kenneth Keegstra**, Director  
MSU-DOE Plant Research Laboratory

**Richard E. Groop**, Director  
Center for Remote Sensing

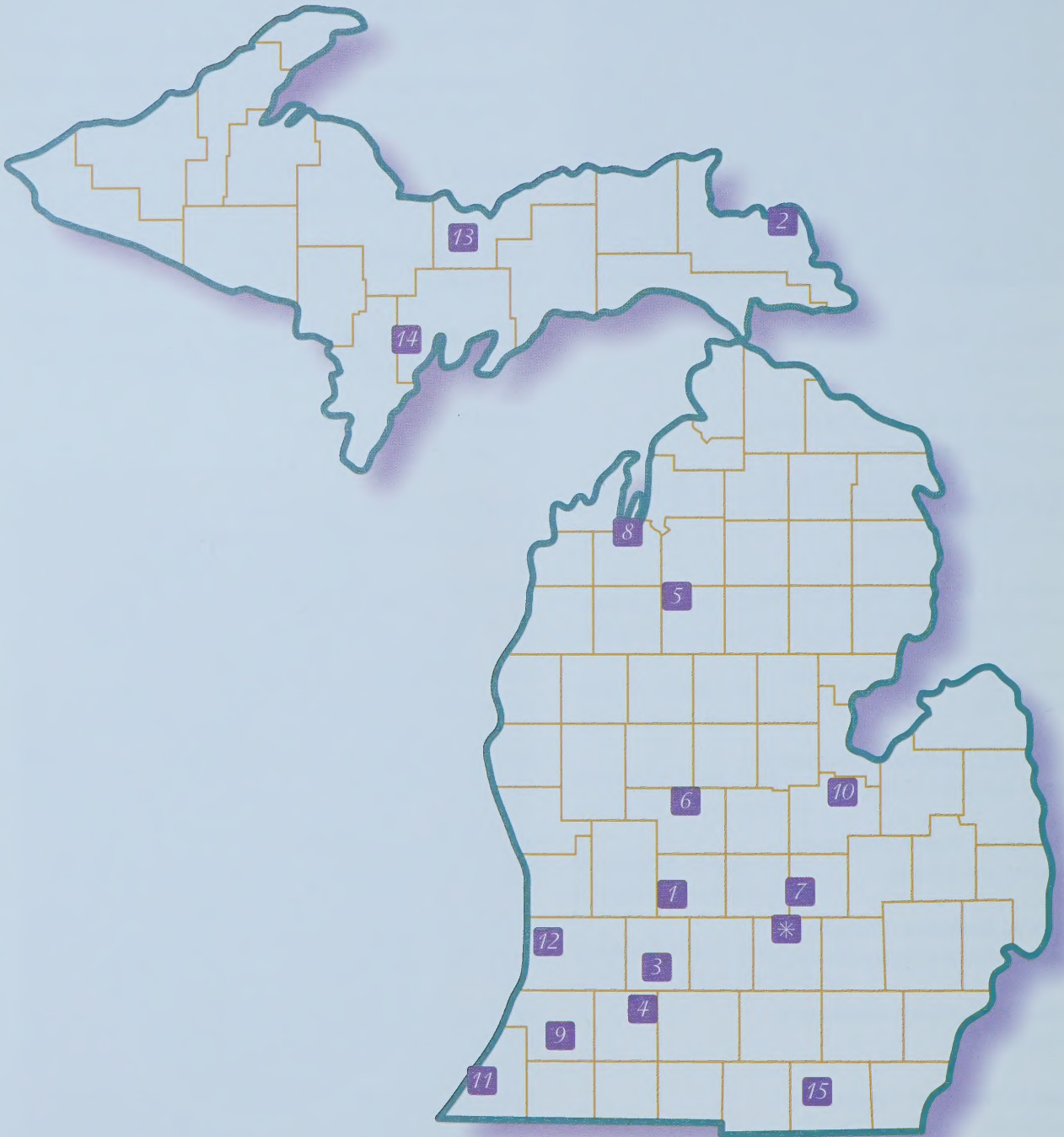
**Jon F. Bartholic**, Director  
Institute for Water Research

**Cynthia C. Fridgen**, Chairperson  
Resource Development

**Christopher K. Vanderpool**, Chairperson  
Sociology



*Michigan Agricultural Experiment Station  
Outlying Stations — 10-1-98*





**1. CLARKSVILLE HORTICULTURAL EXPERIMENT STATION**

*Established 1974*  
 9302 Portland Road  
 Clarksville, MI 48815  
 Phone: (616) 693-2193  
 FAX: (616) 693-2317  
 Gerald Skeltis  
*Farm Manager*  
 Phil Schwallier  
*Coordinator*

**2. DUNBAR FOREST EXPERIMENT STATION**

*Established 1925*  
 12839 S. Scenic Drive  
 Rt. 1, Box 179  
 Sault Ste. Marie, MI 49783  
 Phone: (906) 632-3932 or  
 (906) 786-1575  
 Ray Miller  
*Nonresident Forester*

**3. W. K. KELLOGG BIOLOGICAL STATION**

*Established 1928*  
 3700 E. Gull Lake Drive  
 Hickory Corners, MI 49060  
 FAX: (616) 671-2351  
 Bernie Knezek (517) 353-4569  
*Director, Agricultural Programs*  
 Mike Klug (616) 671-2341  
*Director, Programs and Development*

**4. W. K. KELLOGG EXPERIMENTAL FOREST**

*Established 1932*  
 7060 N. 42nd Street  
 Augusta, MI 49012  
 Phone: (616) 731-4597  
 FAX: (616) 731-4597  
 Greg Kowalewski  
*Resident Forester*

**5. LAKE CITY EXPERIMENT STATION**

*Established 1928*  
 5401 W. Jennings Road  
 Lake City, MI 49651  
 Phone: (616) 839-4608  
 Doug Nielsen  
*Farm Manager*

**6. MONTCALM RESEARCH FARM**

*Established 1966*  
 4747 McBrides Road  
 Lakeview, MI 48850  
 Phone: (517) 365-3473  
 Richard Crawford  
*Research Technician*

**7. MUCK SOILS RESEARCH FARM**

*Established 1941*  
 Rt. 3  
 9370 E. Herbison Road  
 Laingsburg, MI 48848  
 Phone: (517) 641-4062  
 Ron Gnagey  
*Farm Manager*

**8. NORTHWEST MICHIGAN HORTICULTURAL RESEARCH STATION**

*Established 1979*  
 6686 S. Center Highway  
 Traverse City, MI 49684  
 Phone: (616) 946-1510  
 FAX: (616) 946-1404  
 James Nugent  
*Coordinator*  
 Bill Klein  
*Farm Manager*

**9. FRED RUSS FOREST EXPERIMENT STATION**

*Established 1942*  
 20673 Marcellus Highway  
 Decatur, MI 49045  
 Phone: (616) 782-5652 or  
 (616) 731-4597  
 Greg Kowalewski  
*Nonresident Forester*

**10. SAGINAW VALLEY BEET AND BEAN RESEARCH FARM**

*Established 1971*  
 3066 S. Thomas Road  
 Saginaw, MI 48603  
 Phone: (517) 781-1160  
 FAX: (517) 781-5282  
 Paul Horny  
*Farm Manager*

**11. SOUTHWEST MICHIGAN RESEARCH AND EXTENSION CENTER**

*Established 1987*  
 1791 Hillandale Road  
 Benton Harbor, MI 49022  
 Phone: (616) 944-1477  
 FAX: (616) 944-3106  
 James Ertman  
*Farm Manager*  
 Thomas Zabadal  
*Coordinator*

**12. TREVOR NICHOLS RESEARCH COMPLEX**

*Established 1967*  
 6237 124th Avenue  
 Fennville, MI 49408  
 Phone: (616) 561-5040  
 FAX: (616) 561-5314  
 Matthew Daly  
*Farm Manager*

**13. UPPER PENINSULA EXPERIMENT STATION**

*Established 1899*  
 E3774 University Drive  
 P.O. Box 168  
 Chatham, MI 49816  
 Phone: (906) 439-5114  
 FAX: (906) 439-5698  
 Paul Naasz  
*Operations Supervisor*

**14. UPPER PENINSULA TREE IMPROVEMENT CENTER**

*Established 1986*  
 6005 J Road  
 Escanaba, MI 49829  
 Phone: (906) 786-1575  
 FAX: (906) 786-9370  
 Ray Miller  
*Resident Forester*

**15. MSU MERILLAT EQUINE CENTER**

*Established 1997*  
 2828 Wolf Creek Highway  
 Adrian, MI 49221  
 Phone: (517) 265-6779  
 FAX: (517) 263-9294  
 Shorty Parks  
*Farm Manager*

**\* EAST LANSING FIELD RESEARCH FACILITIES**

*Established 1888*  
 109 Agriculture Hall  
 East Lansing, MI 48824-1039  
 Phone: (517) 355-3272  
 FAX: (517) 353-5406  
 C. Gerald Haarer  
*Director, Land Management*

# Alphabetical List of MAES Scientists

As of 10-1-98

Faculty members with dual MAES appointments are listed in both of the departments in which they serve.

NAME	DEPARTMENT
Adams, Gerard C.	Botany and Plant Pathology
Allen, Michael	Animal Science
Allison, Richard F.	Botany and Plant Pathology
Aronoff, Marilyn	Sociology
Aulerich, Richard J.	Animal Science
Ayers, George S.	Entomology
Bagdasarian, Michael	Microbiology
Baird, James H.	Crop and Soil Sciences
Baker, John C.	Large Animal Clinical Sciences
Bakker-Arkema, Fred W.	Agricultural Engineering
Balander, Richard J.	Animal Science
Banks, Bobby D.	Animal Science
Bates, Ronald O.	Animal Science
Batie, Sandra S. <sup>1</sup>	Agricultural Economics
Beaudry, Randolph M.	Horticulture
Beede, David <sup>5</sup>	Animal Science
Behe, Bridget K.	Horticulture
Bell, Thomas G.	Pathology
Bence, James R. <sup>6</sup>	Fisheries and Wildlife
Benning, Christoph	Biochemistry
Bennink, Maurice R.	Food Science and Human Nutrition
Benson, Margaret	Animal Science
Berglund, Kris A.	Agricultural Engineering
Bickert, William G.	Agricultural Engineering
Biernbaum, John A.	Horticulture
Bingen, R. James	Resource Development
Bird, George W.	Entomology
Black, J. Roy	Agricultural Economics
Bokemeier, Janet L.	Sociology
Bond, Jenny T.	Food Science and Human Nutrition
Booren, Alden M.	Food Science and Human Nutrition
Bourquin, Leslie D.	Food Science and Human Nutrition
Boyd, Stephen A.	Crop and Soil Sciences
Bremigan, Mary T. <sup>6</sup>	Fisheries and Wildlife
Breznak, John A.	Microbiology
Bristow, Catherine	Entomology
Bronstein, Daniel A.	Resource Development
Brook, Roger C.	Agricultural Engineering
Bucholtz, Herbert F.	Animal Science
Bursian, Steven	Animal Science

NAME	DEPARTMENT
Burton, Jeanne L.	Animal Science
Burton, Zachary F.	Biochemistry
Busch, Lawrence M.	Sociology
Bush, Guy L.	Kellogg Biological Station
Buskirk, Daniel	Animal Science
Cameron, Arthur C.	Horticulture
Campa, Henry III	Fisheries and Wildlife
Carlson, William H.	Horticulture
Cash, Jerry N.	Food Science and Human Nutrition
Champness, Wendy C.	Microbiology
Chenoweth, Wanda L.	Food Science and Human Nutrition
Chou, Karen	Animal Science
Christenson, Donald R.	Crop and Soil Sciences
Clarke, Robert	Packaging
Coe, Paul H.	Animal Science
Coon, Thomas G.	Fisheries and Wildlife
Copeland, Lawrence O.	Crop and Soil Sciences
Coussens, Paul M.	Animal Science
Crawford, Eric W.	Agricultural Economics
Crum, James L.	Crop and Soil Sciences
de Bruijn, Frans J.	Microbiology
de Bruijn, Frans J.	Plant Research Laboratory
D'Itri, Frank M.	Institute of Water Research
Dazzo, Frank B.	Crop and Soil Sciences
Dazzo, Frank B.	Microbiology
Dersch, Eckhart	Resource Development
DiFonzo, Christina D.	Pesticide Research Center
Dickmann, Donald I.	Forestry
Dilley, David R.	Horticulture
Dong, Ke	Entomology
Douches, David S.	Crop and Soil Sciences
Doumit, Matthew E.	Animal Science
Doumit, Matthew E.	Food Science and Human Nutrition
Downes, Theron W.	Packaging
Dukelow, W. Richard	Physiology
Dukelow, W. Richard	Animal Science
Edens, Thomas C.	Entomology
Edens, Thomas C.	Resource Development
Edson, Charles E.	Pesticide Research Center
Eicher, Carl K.	Agricultural Economics



NAME	DEPARTMENT
Epperson, Bryan K.	Forestry
Ernst, Catherine W.	Animal Science
Erskine, Ronald J.	Large Animal Clinical Sciences
Ferris, Theodore A.	Animal Science
Flore, James A.	Horticulture
Fogwell, Ralph L.	Animal Science
Foster, Eunice F.	Crop and Soil Sciences
Fraker, Pamela J.	Food Science and Human Nutrition
Fraker, Pamela J.	Biochemistry
Freed, Russell D.	Crop and Soil Sciences
Fried, Jeremy S.	Forestry
Fulbright, Dennis W.	Botany and Plant Pathology
Gage, Douglas A.	Biochemistry
Gage, Stuart H.	Entomology
Garling, Donald L.	Fisheries and Wildlife
Gerrish, John B.	Agricultural Engineering
Giacin, Jack R.	Packaging
Giesy, John P.	National Food Safety Toxicology Center
Gomez-Duran, Charles O.	Large Animal Clinical Sciences
Grooms, Daniel L.	Large Animal Clinical Sciences
Grumet, Rebecca	Horticulture
Gut, Larry	Entomology
Guyer, Daniel E.	Agricultural Engineering
Hammerschmidt, Raymond	Botany and Plant Pathology
Hancock, James F.	Horticulture
Hanson, Eric J.	Horticulture
Hanson, Steven D.	Agricultural Economics
Harkema, Jack	Pathology
Harris, Craig K.	Sociology
Harsh, Stephen B.	Agricultural Economics
Hart, James B., Jr.	Forestry
Hart, L. Patrick	Botany and Plant Pathology
Harwood, Richard R. <sup>2</sup>	Crop and Soil Sciences
Hausbeck, Mary K.	Botany and Plant Pathology
Hausinger, Robert P.	Biochemistry
Hausinger, Robert P.	Microbiology
Hawkins, David R.	Animal Science
Hayes, Daniel B. <sup>6</sup>	Fisheries and Wildlife
He, Sheng-Yang	Botany and Plant Pathology
Heins, Royal D.	Horticulture
Heinze, Kirk L.	Agricultural and Extension Education
Herd, Thomas H.	Large Animal Clinical Sciences
Hernandez, Ruben J.	Packaging
Herner, Robert C.	Horticulture



NAME	DEPARTMENT
Hill, Gretchen M.	Animal Science
Hoehn, John P.	Agricultural Economics
Hoerr, Sharon M.	Food Science and Human Nutrition
Holecek, Donald F.	Park, Recreation and Tourism Resources
Holland, Margo S.	Pathology
Holland, Robert E.	Large Animal Clinical Sciences
Hollingsworth, Rawle I.	Biochemistry
Hord, Norman	Food Science and Human Nutrition
Howe, Gregg A.	Plant Research Laboratory
Howell, Gordon S.	Horticulture
Iezzoni, Amy F.	Horticulture
Imig, David R.	Family and Child Ecology
Ireland, James J.	Animal Science
Jacobs, Lee W.	Crop and Soil Sciences
Jarosz, Andrew M.	Botany and Plant Pathology
Johnson, Nan E.	Sociology
Jones, Alan L.	Botany and Plant Pathology
Jones, Michael L. <sup>6</sup>	Fisheries and Wildlife
Jump, Donald B.	Physiology
Kaguni, Jon M.	Biochemistry
Kakela, Peter J.	Resource Development
Kamdem, Donatien-Pascal	Forestry
Kaneene, John B.	Large Animal Clinical Sciences
Keefe, Dennis R.	Family and Child Ecology
Keith, Joanne G.	Family and Child Ecology
Kells, James J., Jr.	Crop and Soil Sciences
Kelly, James D.	Crop and Soil Sciences
Kelly, John F.	Horticulture
Kielbaso, Julian J.	Forestry
Klug, Michael J.	Microbiology
Knezek, Bernard D.	Crop and Soil Sciences
Kobe, Richard K.	Forestry
Kroos, Lee R.	Biochemistry

NAME	DEPARTMENT
Landis, Douglas A.	Entomology
Lantagne, Douglas O.	Forestry
Lee, Julian J. L.	Packaging
Leefers, Larry A.	Forestry
Leep, Richard H.	Crop and Soil Sciences
Lenski, Richard E. <sup>3</sup>	Crop and Soil Sciences
Levine, S. Joseph	Agricultural and Extension Education
Li, Weiming <sup>6</sup>	Fisheries and Wildlife
Linz, John E.	Food Science and Human Nutrition
Liu, Jianguo <sup>6</sup>	Fisheries and Wildlife
Lloyd, James W.	Agricultural Economics
Loudon, Theodore L.	Agricultural Engineering
Lownds, Norman K.	Horticulture
Maes, Roger K.	Microbiology
Mao, Ivan Ling	Animal Science
Martin, Laura L.	Agricultural Economics
McCullough, Deborah G.	Entomology
McDonough, Maureen H.	Forestry
Melakerberhan, Haddish	Entomology
Merritt, Richard W.	Entomology
Miller, James R.	Entomology
Mokma, Delbert L.	Crop and Soil Sciences
Myers, Robert S.	Agricultural Economics
Nair, Muraleedharan G.	Horticulture
Nelson, Charles M.	Park, Recreation and Tourism Resources
Ng, Perry K. W.	Food Science and Human Nutrition
Nielsen, Brian D.	Animal Science
Norris, Patricia E.	Agricultural Economics
Norris, Patricia E.	Resource Development
Oehmke, James F.	Agricultural Economics
Ofoli, Robert Y.	Food Science and Human Nutrition
Ohlrogge, John B.	Botany and Plant Pathology
Orth, Michael	Animal Science
Osburn, Wesley N.	Animal Science
Osburn, Wesley N.	Food Science and Human Nutrition
Padgett, George A.	Pathology
Patterson, Jon S.	Pathology
Paul, Eldor A.	Crop and Soil Sciences
Penner, Donald	Crop and Soil Sciences
Perry, Ronald L.	Horticulture
Person, Howard L.	Agricultural Engineering
Pestka, James J.	Food Science and Human Nutrition
Peterson, H. Christopher	Agricultural Economics
Peyton, R. Benny	Fisheries and Wildlife

NAME	DEPARTMENT
Pierce, Francis J.	Crop and Soil Sciences
Poff, Ken	Botany and Plant Pathology
Potter-Witter, Karen L.	Forestry
Prather, L. Alan	Botany and Plant Pathology
Preiss, Jack	Biochemistry
Price, James F.	Food Science and Human Nutrition
Prince, Harold H.	Fisheries and Wildlife
Propst, Dennis B.	Park, Recreation and Tourism Resources
Pysarchik, Dawn I.	Human Environment and Design
Raikhel, Alexander S.	Entomology
Ramm, Carl W.	Forestry
Raper, Kellie K.	Agricultural Economics
Reddy, C. Adinarayana	Microbiology
Renner, Karen A.	Crop and Soil Sciences
Ricks, Donald J.	Agricultural Economics
Rieke, Paul E.	Crop and Soil Sciences
Ritchie, Harlan D.	Animal Science
Ritchie, Joe T. <sup>4</sup>	Crop and Soil Sciences
Roberson, Kevin D.	Animal Science
Robertson, G. Philip	Crop and Soil Sciences
Robinson, Norman E.	Large Animal Clinical Sciences
Robison, Lindon J.	Agricultural Economics
Rogers, John N. III	Crop and Soil Sciences
Romsos, Dale R.	Food Science and Human Nutrition
Rook, Joseph S.	Large Animal Clinical Sciences
Rosenbaum, Rene P.	Resource Development
Rowe, D. Bradley	Horticulture
Rozeboom, Dale	Animal Science
Rudy, Alan P.	Sociology
Rust, Steven	Animal Science
Ryser, Elliott T.	Animal Science
Ryser, Elliott T.	Food Science and Human Nutrition
Safir, Gene R.	Botany and Plant Pathology
Sang, Tao	Botany and Plant Pathology
Schabenberger, Oliver	Crop and Soil Sciences
Schemmel, Rachelle A.	Food Science and Human Nutrition
Schiamberg, Lawrence R.	Family and Child Ecology
Schilder, Annemiek C.	Botany and Plant Pathology
Schindler, Melvin S.	Biochemistry
Schmid, A. Allan	Agricultural Economics
Schmidt, Thomas M.	Microbiology
Schroeder, Joseph J.	Food Science and Human Nutrition
Schultink, Gerhardus	Resource Development
Schutzki, Robert E.	Horticulture
Schwab, Gerald D.	Agricultural Economics



NAME	DEPARTMENT
Schweikhardt, David B.	Agricultural Economics
Scriber, J. Mark	Entomology
Scribner, Kim T. <sup>6</sup>	Fisheries and Wildlife
Sears, Barbara B.	Botany and Plant Pathology
Sears, Phillip M.	Large Animal Clinical Sciences
Segerlind, Larry J.	Agricultural Engineering
Singh, Sher Paul	Packaging
Sink, Kenneth C.	Horticulture
Slocum, Ann C.	Human Environment and Design
Smith, Denise M.	Food Science and Human Nutrition
Smith, George W.	Animal Science
Smitley, David R.	Entomology
Smucker, A.J.M.	Crop and Soil Sciences
Song, Won O.	Food Science and Human Nutrition
Sontag, M. Suzanne	Human Environment and Design
Soranno, Patricia A.	Fisheries and Wildlife
Staatz, John S.	Agricultural Economics
Steffe, James F.	Food Science and Human Nutrition
Steffe, James F.	Agricultural Engineering
Stehr, Frederick W.	Entomology
Sternquist, Brenda J.	Human Environment and Design
Strasburg, Gale M.	Food Science and Human Nutrition
Straw, Barbara E.	Large Animal Clinical Sciences
Stynes, Daniel J.	Park, Recreation and Tourism Resources
Surbrook, Truman C.	Agricultural Engineering
Suvedi, Murari	Agricultural and Extension Education
Swinton, Scott M.	Agricultural Economics
Tempelman, Robert	Animal Science
Teppen, Brian J.	Crop and Soil Sciences
Thiem, Suzanne	Entomology
Thomashow, Michael F.	Microbiology
Thomashow, Michael F.	Crop and Soil Sciences
Tiedje, James M.	Crop and Soil Sciences
Tiedje, James M.	Microbiology
Trail, Frances	Botany and Plant Pathology
Triezenberg, Steven J.	Biochemistry
Trottier, Nathalie	Animal Science
Tucker, H. Allen	Animal Science
Ustunol, Zeynep	Food Science and Human Nutrition
Van Ee, Gary R.	Agricultural Engineering
VandeHaar, Michael	Animal Science
Vander Stoep, Gail A.	Park, Recreation, and Tourism Resources
van Nocker, Steven R.	Horticulture
van Ravenswaay, Eileen O.	Agricultural Economics

NAME	DEPARTMENT
Vargas, Joseph M., Jr.	Botany and Plant Pathology
Velicer, Leland F.	Microbiology
Vitosh, Maurice L.	Crop and Soil Sciences
von Bernuth, Robert D.	Agricultural Engineering
Walker, Edward D.	Entomology
Walker, Rosemary A.	Family and Child Ecology
Walters, Michael B. <sup>6</sup>	Forestry
Walton, Jonathan D.	Plant Research Laboratory
Wang, John L.	Biochemistry
Ward, Richard W.	Crop and Soil Sciences
Warncke, Darryl D.	Crop and Soil Sciences
Watson, J. Throck	Biochemistry
Weatherspoon, Dave D.	Agricultural Economics
Weber, Michael T.	Agricultural Economics
Whims, Fred R.	Agricultural and Extension Education
Whipple, Judith M.	Agricultural Economics
Widders, Irvin E.	Horticulture
Winterstein, Scott R.	Fisheries and Wildlife
Witter, Scott G.	Resource Development
Wolf, Christopher A.	Agricultural Economics
Yokoyama, Melvin T.	Animal Science
Zabadal, Thomas J.	Horticulture
Zabik, Mary E.	Food Science and Human Nutrition
Zabik, Matthew J.	Pesticide Research Center
Zabik, Matthew J.	Entomology
Zacharewski, Timothy R.	National Food Safety Toxicology Center
Zandstra, Bernard H.	Horticulture
Zanella, Adroaldo	Animal Science
Zile, Maija H.	Food Science and Human Nutrition

**<sup>1</sup> Elton Smith Endowed Chair****<sup>2</sup> C.S. Mott Distinguished Professor of Sustainable Agriculture****<sup>3</sup> Hannah Professor for Microbial Ecology and Plant Sciences****<sup>4</sup> Nowlin Professor for Water Research (50 percent of the appointment is paid by the endowment)****<sup>5</sup> Clinton Meadows Chair****<sup>6</sup> Partnerships for Ecosystem Research and Management (PERM) positions with salary funded by the Michigan Department of Natural Resources**

# MAES Scientists and Projects by Department

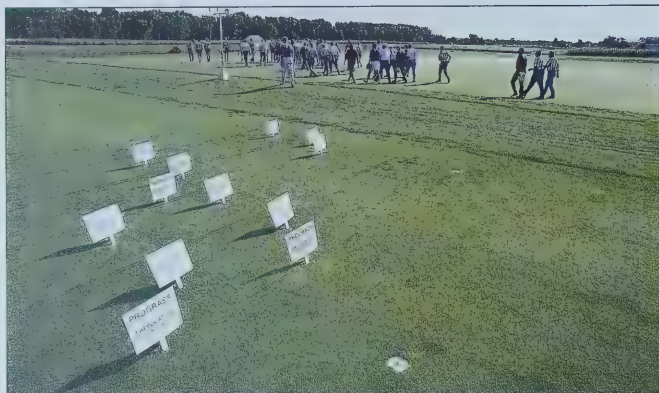
The names listed here represent faculty members who have an MAES appointment and are in the tenure stream as of 10-1-98. Faculty members with dual MAES appointments are listed in both of the departments in which they serve.

## SCIENTISTS

MAES = Michigan Agricultural Experiment Station  
MSUE = Michigan State University Extension  
Joint = Joint appointment in an MAES-affiliated College or Department  
12 = Professor  
13 = Associate Professor  
14 = Assistant Professor

## PROJECTS

Projects listed are as of 10-1-98.  
\*Signifies Regional Research Project



## Agricultural and Extension Education

Phone: 355-6580



Kirk L. Heinze, Acting Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Heinze, Kirk L.	13	0.20	0.00	0.80	Marketing Communication
Levine, S. Joseph	12	0.20	0.50	0.30	Faculty Development
Suvedi, Murari	13	0.25	0.50	0.25	Program Evaluation
Whims, Fred R.	12	0.12	0.40	0.48	Extension Education/Rural Education
<b>TOTALS:</b>		<b>0.77</b>	<b>1.40</b>	<b>1.83</b>	

### PROJECTS

MICL01752*	The Adoption of Sustainable Farming Systems: Implications to Agricultural Education	Suvedi, M.
MICL03316	Assessing Retailer/Consumer Perceptions and Use of Michigan-Produced Commodities	Heinze, K.
MICL03372	Evaluation of Area of Expertise (AOE) Team Approach to Applied Research and Extension in Michigan	Suvedi, M.

## Agricultural Economics

Phone: 355-4563



Larry G. Hamm, Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Batie, Sandra S. <sup>1</sup>	12	0.60	0.20	0.20	Food and Agriculture Policy
Black, J. Roy	12	0.80	0.00	0.20	Farm Management
Crawford, Eric W.	12	0.40	0.35	0.25	International Development
Eicher, Carl K.	12	0.50	0.00	0.50	International Development
Hanson, Steven D.	13	0.80	0.00	0.20	Agricultural Finance
Harsh, Stephen B.	12	0.20	0.65	0.15	Farm Management



	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Hoehn, John P.	12	0.70	0.00	0.30	Resource Development
Lloyd, James W.	13	0.20	0.00	0.80	Livestock Production/Health Management/Food Safety
Martin, Laura L.	14	0.50	0.50	0.00	Livestock Industry Management
Myers, Robert S.	12	0.80	0.00	0.20	International Trade & Price Analysis
Norris, Patricia E.	13	0.12	0.30	0.58	Land Use Management/Public Resource Economics
Oehmke, James F.	13	0.75	0.00	0.25	Price Analysis & Research Policy
Peterson, H. Christopher	13	0.40	0.00	0.60	Agribusiness
Raper, Kellie K.	14	0.75	0.00	0.25	Livestock Industry Marketing Economist
Ricks, Donald J.	12	0.20	0.70	0.10	Marketing
Robison, Lindon J.	12	0.65	0.00	0.35	Production Economics
Schmid, A. Allan	12	0.60	0.00	0.40	Land Economics/Public Policy
Schwab, Gerald D.	12	0.20	0.50	0.30	Farm Management
Schweikhardt, David B.	13	0.25	0.40	0.35	Agricultural Trade Policy
Staatz, John S.	12	0.25	0.00	0.75	International Development
Swinton, Scott M.	13	0.70	0.00	0.30	Production Economics
van Ravenswaay, Eileen O.	12	0.75	0.00	0.25	Public Policy/Food Safety
Weatherspoon, Dave D.	14	0.40	0.00	0.60	Food & Agribusiness Management
Weber, Michael T.	12	0.80	0.00	0.20	International Development
Whipple, Judith M.	13	0.30	0.20	0.50	Food & Agribusiness Management
Wolf, Christopher A.	14	0.50	0.50	0.00	Dairy Farm Management Economics
<b>TOTALS:</b>		<b>13.12</b>	<b>4.30</b>	<b>8.58</b>	

## PROJECTS

MICL01518*	Benefits and Costs of Resource Policies Affecting Public and Private Land	Hoehn, J.
MICL01519*	Private Strategies, Public Policies, and Food System Performance	van Ravenswaay, E.
MICL01530*	Fruit and Vegetable Supply-Chain Management, Innovations, and Competitiveness	Ricks, D.
MICL01576*	Farm Information Systems	Harsh, S.
MICL01625	Financial Decision Making and Investment in Agriculture	Hanson, S.
MICL01635	Collective Action in Agriculture, Natural Resources and Rural Development	Schmid, A.
MICL01642*	Impacts of Structural Change in the Dairy Industry	Wolf, C.
MICL01666*	Impact Analyses and Decision Strategies for Agricultural Research	Oehmke, J.
MICL01732	National and International Agricultural Policies and Policy Decision Processes	Schweikhardt, D.
MICL01737	Changing Private and Public Roles in Technology Development, Technology Transfer and Seed Distribution	Eicher, C.
MICL01744	Agricultural Economics Research on International Agricultural Development and Environmental Issues	Eicher, C.
MICL01770	Economic Analysis of Public Policies Affecting the Performance of Michigan Agriculture	Batie, S.
MICL01788	Economic Analysis of Tactical and Operational Decisions on Farms and Design/Development of Information Systems	Harsh, S.
MICL01790	Structural Adjustments in Michigan's Pork and Beef Sectors	Black, J.
MICL01815	The Political Economy of U.S. Agricultural Research, Commodity and Trade Policy	Oehmke, J.
MICL01844	Risk Analysis and Management in U.S. Agriculture	Myers, R.
MICL01850	The Role of Information and Market Transactions in Land Use Policy	Norris, P.

# Agricultural Economics (continued)

MICL01865	Role of Information and Transactions Costs in Coordination of Global Food Systems	Staatz, J.
MICL01876	Organization, Coordination, and Performance of U.S. Livestock and Meat Industries	Koontz, S.
MICL01889	Social Capital, Terms of Trade, and the Internalization of Externalities	Robison, L.
MICL03333	Improved Marketing and Competitiveness for Michigan Fruit Industries	Ricks, D.
MICL03356	Economics of Vertical Coordination and Intensive Production in Michigan's Livestock Industries	Martin, L.
MICL08153	Rural <i>Colonias</i> in the Southwest: Conditions and Implications	Rochin, R.
MICL08201	Enhancing Rural Economies Through Comprehensive Extension, Research and Partnering Approaches	Moser, C.
MICL08204	Social Capital: An International Conference Bridging Disciplines, Policies and Communities	Robison, L.

# Agricultural Engineering

Phone: 355-4720



Ajit K. Srivastava,  
Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bakker-Arkema, Fred W.	12	0.65	0.00	0.35	Grain Dry Storage
Berglund, Kris A.	12	0.49	0.00	0.51	Biotechnology/Food Engineering
Bickert, William G.	12	0.20	0.80	0.00	Livestock Facilities/Environment
Brook, Roger C.	12	0.25	0.75	0.00	Postharvest Handling, Storage, Drying
Gerrish, John B.	12	0.40	0.00	0.60	Electronics/Odor Control
Guyer, Daniel E.	13	0.25	0.75	0.00	Fruit/Vegetable Storage/Handling
Loudon, Theodore L.	12	0.30	0.70	0.00	Irrigation/Waste Water Treatment
Person, Howard L.	13	0.30	0.70	0.00	Agricultural Structures/Livestock/Waste Treatment
Segerlind, Larry J.	12	0.35	0.00	0.65	Finite Element Analysis/Structures
Steffe, James F.	12	0.35	0.00	0.65	Food Engineering/Rheology
Surbrook, Truman C.	12	0.25	0.00	0.75	Electrical Technology /Stray Voltage
Van Ee, Gary R.	12	0.65	0.00	0.35	Chemical Application/Power & Machinery
von Bernuth, Robert D.	12	0.36	0.26	0.38	Manure Management
<b>TOTALS:</b>		<b>4.80</b>	<b>3.96</b>	<b>4.24</b>	

## PROJECTS

MICL01245*	Improvement of Thermal Processes for Foods	Steffe, J.
MICL01579	Development of Machine Concepts for Mechanized Agriculture	Ledebuhr, R.
MICL01581	Value-Added Quality Control Techniques in the Postharvest Stages of Fruit and Vegetable Products	Guyer, D.
MICL01591*	Microirrigation: Management Practices to Sustain Water Quality and Agricultural Productivity	von Bernuth, R.
MICL01676*	Technology and Principles for Assessing and Retaining Postharvest Quality of Fruits and Vegetables	Guyer, D.
MICL01726	Laser Spectroscopy for Analysis of Crystallization Processes	Berglund, K.
MICL01738*	Marketing and Delivery of Quality Cereals and Oilseeds	Bakker-Arkema, F.
MICL01767	Development of Chemical Application Technology for Agribusiness	Van Ee, G.
MICL01777	Engineering for Food Quality and Safety	Brook, R.
MICL01784	Marketing and Delivery of Quality Cereals and Oilseeds	Bakker-Arkema, F.
MICL01787	Improvement of Small-Scale Decentralized and Onsite Wastewater Treatment and Disposal	Loudon, T.
MICL01793	Dimensional Analysis and Scale Modeling in Biosystems Engineering	Srivastava, A.



# Agricultural Engineering (continued)

MICL01794	Analysis and Characterization of Biosystems
MICL01799	Designing Dairy Facilities to Enhance Management and to Meet Animals' Needs
MICL01809	Deposition Efficiency of Chemical Application
MICL01862	Neutral-To-Earth Voltage Reduction on Livestock Farms
MICL01883	Facilitating Beneficial Use of Livestock Manure
MICL01888*	Animal Manure and Waste Utilization, Treatment and Nuisance Avoidance for a Sustainable Agriculture
MICL08180	Rheology and Protein Chemistry of "Undeveloped" Dough

Gerrish, J.  
Bickert, W.  
Wilkinson, R.  
Surbrook, T.  
Person, H.  
  
von Bernuth, R.  
Steffe, J.



Photo by Ann Barnes

## Animal Science

Phone: 355-8383



Maynard G. Hogberg,  
Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Allen, Michael	12	0.50	0.50	0.00	Forage Nutrition
Aulerich, Richard J.	12	0.75	0.25	0.00	Fur-bearing Animals/Nutrition/ Toxicology
Balander, Richard J.	13	0.40	0.00	0.60	Avian Physiology/Reproduction
Banks, Bobby D.	12	0.25	0.00	0.75	Animal Genetics
Bates, Ronald O.	14	0.20	0.80	0.00	Swine Genetics/Management
Beede, David <sup>5</sup>	12	0.50	0.35	0.15	Dairy Nutrition/Dairy Management
Benson, Margaret	12	0.20	0.50	0.30	Ruminant Nutrition/Sheep
Bucholtz, Herbert F.	12	0.15	0.70	0.15	Dairy Nutrition/Management
Bursian, Steven	12	0.85	0.00	0.15	Avian Physiology/Toxicology
Burton, Jeanne L.	14	0.80	0.00	0.20	Molecular Genetics/Dairy Cattle
Buskirk, Daniel	14	0.50	0.50	0.00	Ruminant Nutrition/Beef
Chou, Karen	13	0.80	0.00	0.20	Toxicology
Coe, Paul H.	13	0.20	0.00	0.80	Animal Health
Coussens, Paul M.	13	0.80	0.00	0.20	Molecular Biology
Doumit, Matthew E.	14	0.25	0.00	0.75	Meat Science/Muscle Biology
Dukelow, W. Richard	12	0.25	0.00	0.75	Reproductive Physiology
Ernst, Catherine W.	14	0.80	0.00	0.20	Meat Animal Genetics
Ferris, Theodore A.	12	0.20	0.80	0.00	Dairy Genetics
Fogwell, Ralph L.	12	0.30	0.50	0.20	Physiology
Hawkins, David R.	12	0.15	0.00	0.85	Beef Cattle Nutrition/Management
Hill, Gretchen M.	13	0.85	0.00	0.15	Swine Nutrition
Ireland, James J.	12	0.95	0.00	0.05	Physiology

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Mao, Ivan Ling	12	0.95	0.00	0.05	Dairy Genetics
Nielsen, Brian D.	14	0.60	0.00	0.40	Equine Exercise Physiology
Orth, Michael	14	0.80	0.00	0.20	Turkey Nutrition/Growth Biology
Osburn, Wesley N.	14	0.25	0.00	0.75	Meat Science
Ritchie, Harlan D.	12	0.10	0.90	0.00	Beef Cattle Nutrition/Management
Roberson, Kevin D.	14	0.35	0.65	0.00	Poultry Nutrition/Management
Rozeboom, Dale	13	0.15	0.70	0.15	Swine Nutrition/Management
Rust, Steven	12	0.50	0.50	0.00	Beef Feedlot Nutrition
Ryser, Elliott T.	14	0.17	0.00	0.83	Dairy Manufacturing/Microbiology
Smith, George W.	14	0.75	0.00	0.25	Reproductive Physiology
Tempelman, Robert	14	0.50	0.00	0.50	Statistics
Trottier, Nathalie	14	0.40	0.00	0.60	Swine Nutrition/Management
Tucker, H. Allen	12	0.85	0.00	0.15	Physiology/Lactation
VandeHaar, Michael	13	0.65	0.00	0.35	Dairy Nutrition
Yokoyama, Melvin T.	12	0.85	0.00	0.15	Animal Nutrition/Microbiology
Zanella, Adroaldo	14	0.75	0.00	0.25	Ethology/Stress Physiology
<b>TOTALS:</b>		<b>19.27</b>	<b>7.65</b>	<b>11.08</b>	

## PROJECTS

MICL01039	Fur Animal Studies (Mink)	Aulerich, R.
MICL01156*	Management Systems for Improved Decision Making and Profitability of Dairy Herds	Beede, D.
MICL01163	Factors Controlling Growth and Lactation	Tucker, H.
MICL01178	New Breeding Strategies to Maximize the Efficiency of Dairy Cattle Improvement	Mao, I.
MICL01182*	Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation	Doumit, M.
MICL01196*	Methods to Increase Reproductive Efficiency in Cattle	Fogwell, R.
MICL01521*	Metabolic Relationships in Supply of Nutrients for Lactating Cows	VandeHaar, M.
MICL01573	Development of Chimeric Antigens as Vaccines to Regulate Fertility	Ireland, J.
MICL01604	Increasing Efficiency of Protein Production in Dairy Cattle	VandeHaar, M.
MICL01622	Environmental Chemical Influences on Reproduction	Chou, K.
MICL01643	Microbial Ecology of Rumen, Gastrointestinal Tract, Ensiled Feeds and Livestock	Yokoyama, M.
MICL01652*	Environmental and Economic Impacts of Nutrient Flows in Dairy Forage Systems	Allen, M.
MICL01691*	Genetic Improvement of Cattle Using Molecular Genetic Information	Mao, I.
MICL01727	The Fate and Biological Effects of Xenobiotics in Animals	Bursian, S.
MICL01760	Effects of Specific Nutrients on Health and Productivity of Swine	Hill, G.
MICL01800	Optimizing Nutrition and Management of Dry, Peripartum and Early Lactation Dairy Cows	Beede, D.
MICL01802	Optimizing the Nutritional Utilization of Forages by Dairy Cattle	Allen, M.
MICL01803	Nutritional, Management and Other Applied Studies Using Poultry and Other Avian Species	Balander, R.
MICL01818*	Biophysical Models for Poultry Production Systems	Rahn, A.
MICL01822	Advanced Biometrical Techniques for Genetic Inference in Livestock Populations	Tempelman, R.
MICL01823	Methods to Enhance Decision Making by Dairy Producers and Artificial Insemination of Bull Studs	Ferris, T.
MICL01836	Genetic Basis of Parturition-Induced Immunosuppression and Mastitis Susceptibility in Dairy Cows	Burton, J.
MICL01852	Understanding Growth Plate Cartilage Turnover in Meat Producing Birds	Orth, M.
MICL01853	Assessment of Behavioral and Physiological Responses of Animals to Difficult Situations	Zanella, A.
MICL01854	Optimizing Protein and Amino Acid Utilization of Growing Pigs and Gestating and Lactating Sows	Trottier, N.



MICL01861	Management of Athletic Horses to Reduce Musculoskeletal Injuries and Improve Performance	Nielsen, B.
MICL01873*	Positional and Functional Identification of Economically Important Genes in the Pig	Ernst, C.
MICL01875	Using Milk Yield to Schedule Insemination in Dairy Cows	Fogwell, R.
MICL01877	Genetic Management and Control of Growth Carcass Merit and Quality	Bates, R.
MICL01879	Pre- and Postharvest Processing Strategies to Improve the Value of Muscle Food Products	Osburn, W.
MICL01880	Regulation of Skeletal Muscle Growth and Meat Quality	Doumit, M.
MICL01885*	Integration of Quantitative and Molecular Technologies for Genetic Improvement of Pigs	Bates, R.
MICL01890	Mechanisms of Ovulation in Dairy Cattle	Smith, G.
MICL03340	Nutrition and Feeding Management for Michigan Dairy Herds	Bucholtz, H.
MICL03360	Feeding and Management Regimes for Efficient Utilization of Michigan Feedstuffs by Beef Cattle	Buskirk, D.
MICL03366	Utilization of Genetic Resources for the Improvement of Livestock Populations	Banks, B.
MICL06880	Oncogenic Alphaherpesvirus Gene Expression	Coussens, P.
MICL06883	The Use of Propionibacterium for Prevention of Lactic Acidosis	Rust, S.
MICL06888	Does Nitric Oxide Regulate Growth Plate Cartilage Turnover?	Orth, M.
MICL06889	Identification of PCR-RFLPs in Glucocorticoid Receptor Genes of Pedigreed Cattle	Burton, J.
MICL08146	Effects of Inhibins and Their Subunits On Gonadal Function in Heifers	Ireland, J.
MICL08186	Aminergic Regulation of Growth Hormone Secretion in Cattle	Tucker, H.

## Biochemistry

Phone: 355-1600

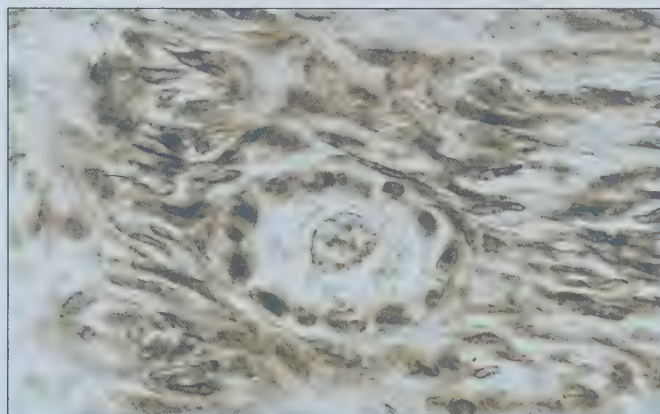


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William L. Smith, Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Benning, Christoph	14	0.67	0.00	0.33	Plant Biochemistry
Burton, Zachary F.	13	0.20	0.00	0.80	Molecular Biology
Fraker, Pamela J.	12	0.30	0.00	0.70	Immunology
Gage, Douglas A.	14	0.56	0.00	0.44	Plant Biochemistry
Hausinger, Robert P.	12	0.25	0.00	0.75	Enzymology
Hollingsworth, Rawle I.	12	0.25	0.00	0.75	Renewable Resource Chemistry
Kaguni, Jon M.	12	0.58	0.00	0.42	Molecular Biology
Kroos, Lee R.	12	0.56	0.00	0.44	Molecular Biology
Preiss, Jack	12	0.25	0.00	0.75	Starch Biochemistry
Schindler, Melvin S.	12	0.35	0.00	0.65	Cell Biology
Triezenberg, Steven J.	12	0.16	0.00	0.84	Molecular Biology
Wang, John L.	12	0.20	0.00	0.80	Cell Biology
Watson, J. Throck	12	0.50	0.00	0.50	Analytical Biochemistry
<b>TOTALS:</b>		<b>4.83</b>	<b>0.00</b>	<b>8.17</b>	

# Biochemistry (continued)

MICL01290*	Regulation of Photosynthetic Processes
MICL01598	Gene Regulation During Development of Soil Bacteria
MICL01601	DNA Replication and Its Regulation in <i>Escherichia coli</i>
MICL01608	Activation of Gene Expression by a Herpes Simplex Virion Protein
MICL01610	Transcription Factors That Bind to RNA Polymerase II
MICL01614	Interaction of Rhizobium With Soybean Cells
MICL01754	Protein Structure Elucidation Using MALDI-Mass Spectrometry
MICL01781	Mechanism of Aluminum Toxicity — Optical Trap Measurements of Cytoskeletal Dysfunction in Living Cells
MICL01816	Biosynthesis of the Plant Osmoprotectant Dimethylsulfoniopropionate (DMSP)
MICL08162	Branching Enzyme and Starch Synthase Isoforms in Starch Synthesis
MICL08179	Genetic Engineering of Amylopullulanses for Agricultural Bioprocessing
MICL08219	Role of Oxylinins in the Regulation of Plant Defense

Preiss, J.
Kroos, L.
Kaguni, J.
Triezenberg, S.
Burton, Z.
Wang, J.
Watson, J.
Schindler, M.
Gage, D.
Preiss, J.
Zeikus, J.
Howe, G.



# Botany and Plant Pathology

Phone: 355-4683



Gustaaf A. de Zoeten,  
Chair

FACULTY	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Adams, Gerard C.	13	0.55	0.27	0.18	Plant Pathology/Mycology
Allison, Richard F.	13	0.75	0.00	0.25	Plant Molecular Virology
Fulbright, Dennis W.	12	0.83	0.00	0.17	Plant Pathology/Plant Pathogen Genetics
Hammerschmidt, Raymond	12	0.83	0.00	0.17	Plant Pathology/Biochemistry/ Physiology/Plant Disease Resistance
Hart, L. Patrick	12	0.40	0.50	0.10	Plant Pathology/Field Crops
Hausbeck, Mary K.	13	0.29	0.61	0.10	Plant Pathology/Ornamentals, Vegetables & Greenhouse Crops
He, Sheng-Yang	14	0.25	0.00	0.75	Molecular Biology/Plant-Pathogen Interactions
Jarosz, Andrew M.	13	0.75	0.00	0.25	Plant Pathology/Pathogen Epidemiology
Jones, Alan L.	12	0.50	0.40	0.10	Plant Pathology/Fruit Tree Crops
Ohlrogge, John B.	12	0.84	0.00	0.16	Plant Physiology/Biochemistry/ Molecular Biology/Plant Lipid Synthesis
Poff, Ken	12	0.25	0.00	0.75	Plant Physiology
Prather, L. Alan	14	0.25	0.00	0.75	Plant Systematics
Safir, Gene R.	12	0.90	0.00	0.10	Plant Pathology/Mycorrhizal Fungi
Sang, Tao	14	0.25	0.00	0.75	Plant Systematics & Molecular Evolution
Schilder, Annemiek C.	14	0.45	0.45	0.10	Plant Pathology/Small Fruits



# Botany and Plant Pathology (continued)

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Sears, Barbara B.	12	0.25	0.00	0.75	Molecular Biology & Plant Organelle Genetics
Trail, Frances	14	0.27	0.00	0.73	Host Pathogen Interactions
Vargas, Joseph M., Jr.	12	0.26	0.49	0.25	Plant Pathology/Diseases/Sod & Turf
<b>TOTALS:</b>		<b>8.87</b>	<b>2.72</b>	<b>6.41</b>	

## PROJECTS

MICL01206*	Biocontrol of Soil-Borne Plant Pathogens	Safir, G.
MICL01259*	<i>Fusarium</i> Mycotoxins in Cereal Grains	Hart, L.
MICL01408*	Biological Improvement of Chestnut and Management of Chestnut Pathogens and Pests	Fulbright, D.
MICL01499	Control and Utilization of VA Mycorrhizal Root Colonization	Safir, G.
MICL01533	Genetic Engineering of Oilseed Crops	Ohlrogge, J.
MICL01562	Physiology of Resistance and Induced Resistance to Disease in Potato	Hammerschmidt, R.
MICL01662	Avirulent Fungal and Bacterial Plant Pathogens: Their Role and Fate in Plant Disease Epidemics	Fulbright, D.
MICL01673	Biology and Control of Pathogens of Field Crops	Hart, L.
MICL01679	<i>Plastome mutator</i> of <i>Oenothera</i> : A Nuclear Gene That Causes Chloroplast DNA Mutations	Sears, B.
MICL01756*	Multidisciplinary Evaluation of New Apple Cultivars	Jones, A.
MICL01808	Recombination Between Viral RNA and Transgenic Plant Transcripts	Allison, R.
MICL01827	Complementation of Movement Function Between Genetic Components of Pea Enation Mosaic Virus	de Zoeten, G.
MICL01832	Management of Turfgrass Diseases	Vargas, J.
MICL01843	Cryptic Plant Pathogenic Fungi: Biology of Latent Pathogens in Symptomless Trees	Adams, G.
MICL01896	Phylogeny of the Rice Genus, <i>Oryza</i> , and Evolution of Rice Disease Resistance Genes	Sang, T.
MICL03183	Diseases of Tree Fruit Crops and Their Control	Jones, A.
MICL07618	Control of Bacterial Diseases in Vegetable Transplants in the Greenhouse	Hausbeck, M.
MICL07619	Controlling Fire Blight Disease of Apple Trees	Jones, A.
MICL08140	Control of Thiabendazole-Resistant <i>Fusarium sambucinum</i> Causing Dry Rot of Potato	Jaros, A.
MICL08167	Recombination Between Viral RNA and Transgenic Plant Transcripts	Allison, R.
MICL08174	Controls of Chloroplast Inheritance	Sears, B.
MICL08203	Factors Affecting Recombination Frequency Between Plant Viruses and Viral Transgenes	Allison, R.
MICL08216	Production of Acetylated Glycerides in Transgenic Oil Crops	Pollard, M.

# Chemical Engineering

Phone: 355-5135

## PROJECTS

MICL07602	Bioprocessing for Utilization of Agricultural Raw Materials	Berglund, K.
MICL07621	Bioprocessing for Utilization of Agricultural Raw Materials	Berglund, K.
MICL08136	Catalytic Upgrading of Lactic Acid	Miller, D.
MICL08193	Multiphase Biocatalysis Using Reversible Aphrons	Worden, R.

# Chemistry

Phone: 355-9715

## PROJECTS

MICL08160	Environmentally Compatible Synthesis of Value-Added Chemicals From D-Glucose
MICL08172	Charge Separation and Stabilization in Chloroplast Photosystem II
MICL08208	Environmentally Compatible Synthesis of Value-Added Chemicals From D-Glucose
MICL08214	Charge Separation and Stabilization in Chloroplast Photosystem II

Frost, J.  
Babcock, G.  
Frost, J.  
Babcock, G.

## Crop and Soil Sciences

Phone: 355-0271



Boyd G. Ellis, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Baird, James H.	14	0.70	0.00	0.30	Turfgrass Management
Boyd, Stephen A.	12	0.75	0.00	0.25	Environmental Soil Chemistry
Christenson, Donald R.	12	0.35	0.50	0.15	Soil Fertility/Management
Copeland, Lawrence O.	12	0.15	0.75	0.10	Seed/Grain Technology
Crum, James L.	12	0.25	0.00	0.75	Soil Class/Genesis/Turfgrass
Dazzo, Frank B.	12	0.10	0.00	0.90	Microbial Ecology
Douches, David S.	13	0.90	0.00	0.10	Potato Breeding/Genetics
Foster, Eunice F.	12	0.15	0.00	0.85	Crop Physiology
Freed, Russell D.	12	0.50	0.00	0.50	International Agronomy/Plant Breeding
Harwood, Richard R. <sup>2</sup>	12	0.60	0.20	0.20	Sustainable Agriculture
Jacobs, Lee W.	12	0.50	0.50	0.00	Environmental Waste Management
Kells, James J., Jr.	12	0.25	0.60	0.15	Weed Science
Kelly, James D.	12	0.75	0.00	0.25	Dry Bean Breeding
Knezek, Bernard D.	12	0.50	0.00	0.50	Micronutrient/Waste Utilization
Leep, Richard H.	12	0.35	0.50	0.15	Soil Fertility/Forage Management
Lenski, Richard E. <sup>3</sup>	12	0.40	0.00	0.60	Microbial Ecology & Evolutionary Biology
Mokma, Delbert L.	12	0.50	0.15	0.35	Soil Classification/Genesis
Paul, Eldor A.	12	0.62	0.14	0.24	Soil Microbiology



# Crop and Soil Sciences (continued)

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Penner, Donald	12	0.80	0.00	0.20	Crop/Weed/Physiology
Pierce, Francis J.	12	0.70	0.00	0.30	Soil Management Systems
Renner, Karen A.	12	0.50	0.50	0.00	Weed Science
Rieke, Paul E.	12	0.35	0.50	0.15	Turfgrass Management
Ritchie, Joe T. <sup>4</sup>	12	0.00	0.50	0.00	Soil Physics/Plant Stress
Robertson, G. Philip	12	0.38	0.00	0.62	Ecosystem Ecology
Rogers, John N. III.	13	0.25	0.00	0.75	Turfgrass Management
Schabenberger, Oliver	14	0.40	0.00	0.60	Statistician
Smucker, A.J.M.	12	0.75	0.00	0.25	Soil Biophysics
Teppen, Brian J.	14	0.75	0.00	0.25	Surface Soil Chemistry
Thomashow, Michael F.	12	0.76	0.00	0.24	Plant & Microbial Molecular Genetics
Tiedje, James M.	12	0.60	0.00	0.40	Soil Microbiology/Microbial Ecology
Vitosh, Maurice L.	12	0.30	0.70	0.00	Soil Fertilization Management
Ward, Richard W.	13	0.75	0.00	0.25	Wheat Breeding
Warncke, Darryl D.	12	0.50	0.50	0.00	Greenhouse/Vegetable Soil Fertility
<b>TOTALS:</b>		<b>16.11</b>	<b>6.04</b>	<b>10.35</b>	

## PROJECTS

MICL00319	Classification, Genesis and Evaluation of Michigan Soils	Mokma, D.
MICL00569	Breeding and Testing Small Grain Cultivars for Michigan	Freed, R.
MICL00908	Fundamental Factors in Cultural and Chemical Weed Control, Weed Competition and Weed Life Cycles	Renner, K.
MICL01124	Efficient Use of Plant Nutrients	Vitosh, M.
MICL01462*	Management of Eroded Soils for Enhancement of Productivity and Environmental Quality	Mokma, D.
MICL01471*	Chemistry and Bioavailability of Waste Constituents in Soils	Jacobs, L.
MICL01538	Harvestability and Processing Quality of Sugar Beet Roots	Saunders, J.
MICL01568	Plant Biotechnology: Molecular Approaches to Improve Environmental Stress Tolerance	Thomashow, M.
MICL01574	Movement and Degradation of Organic Contaminants in Soils	Boyd, S.
MICL01617*	Biological and Ecological Basis for Weed Management Decision Support Systems to Reduce Herbicide Use	Kells, J.
MICL01654	Genetic Improvement Of Beans ( <i>Phaseolus vulgaris</i> L.) for Yield, Pest Resistance and Food Value	Kelly, J.
MICL01685	Crop Rotation Effects on Soil Microbial Activity, Nutrient Use Efficiency and Productivity	Harwood, R.
MICL01761	Weed Management as a Component of Field Crop Production Systems	Kells, J.
MICL01768	Management and Production of Grasses, Legumes and Their Mixtures for Sustainable Forage Crops and Pasture	Leep, R.
MICL01772*	Characterizing Nitrogen Mineralization and Availability in Crop Systems to Protect Water Resources	Jacobs, L.
MICL01779	The Physiology and Biochemistry of Herbicide Action, Selectivity and Degradation	Penner, D.
MICL01780	Impact Absorption, Traction and Wear Tolerance Investigation on Turf and Soil Surfaces	Rogers, J.
MICL01782	Application of Organic and Other Waste Residuals to Agricultural Soils as a Waste Management Option	Jacobs, L.
MICL01796	Soil and Site-Specific Management for Conservation in Agricultural Systems	Pierce, F.
MICL01797	Soil Microbiology and Biochemistry in Agroecosystems	Paul, E.
MICL01806	Breeding and Genetics for the Improvement of Potato ( <i>Solanum tuberosum</i> L.)	Douches, D.
MICL01807	Properties of High Sand Content Soils for Turfgrass Uses	Crum, J.
MICL01821	Microbial Ecology of Soil and Biodegradation	Tiedje, J.

# Crop and Soil Sciences (continued)

MICL01830	Wheat Breeding and Genetics	Ward, R.
MICL01837	Cultivation and Topdressing Effects on Turf and Soil	Rieke, P.
MICL01855	The Role of Mutation in Bacterial Evolution	Lenski, R.
MICL01858	Systems of Cropping	Christenson, D.
MICL01866	Simulation and Measurement of the Water, Nitrogen and Phosphorus Dynamics in Field Crop Production	Ritchie, J.
MICL01867	Parsimonious Biometrical Models Applicable in Agriculture and Natural Resources	Schabenberger, O.
MICL01872	Nitrogen Loss in Row Crop Agriculture	Robertson, G.
MICL01884	Soil Biophysical Mechanisms of Soil Aggregation	Smucker, A.
MICL03122	Development and Correlation of Soil Test Procedures With Crop Yields and Plant Nutrient Contents	Warncke, D.
MICL03260	Forage Management Studies in Northern Michigan	Leep, R.
MICL03302	Management of Organic Soils for Crop Production	Warncke, D.
MICL03324	Drought Resistance in Common Bean	Foster, E.
MICL03359	Variety Release: Canola and Wheat Management	Copeland, L.
MICL07620	Sustainable Agriculture: Management Systems for Integrating Soil, Plants and Animals	Harwood, R.
MICL07624	Improved Production and Utilization Technology Through Variety Development	Douches, D.
MICL08142	Organic N Mineralization and Functional Group Abundance in Clover-Amended Soil	Anderson, S.
MICL08173	Evaluation of Sustainability of the Novel Shoot Meristem Transformation System in NC Cereal Crops	Sticklen, M.
MICL08176	Role of CBP1 in Cold- and Drought-Regulated Gene Expression	Thomashow, M.
MICL08190	Engineering Improved Stress Tolerance in Canola	Thomashow, M.
MICL08194	Root and Soil Carbon Contributions to the Stability and Function of Soil Aggregates	Smucker, A.

# Entomology

Phone: 355-4662



Edward J. Grafius,  
Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Ayers, George S.	12	0.25	0.00	0.75	IPM/Apiculture
Bird, George W.	12	0.20	0.65	0.15	Agricultural Nematology
Bristow, Catherine	13	0.30	0.00	0.70	Insect Ecology
Dong, Ke	14	0.25	0.00	0.75	Insect Toxicology
Edens, Thomas C.	12	0.20	0.00	0.80	Resource Economics & Policy
Gage, Stuart H.	12	0.48	0.12	0.40	Environmental Sytems/Entomological Surveys



	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Gut, Larry	14	0.25	0.65	0.10	Tree Fruit Insects
Landis, Douglas A.	13	0.66	0.14	0.20	Insect Ecology, Biological Control
McCullough, Deborah G.	13	0.30	0.50	0.20	Forest Entomology
Melakerberhan, Haddish	14	0.20	0.00	0.80	Plant-Nematode Interaction Physiology
Merritt, Richard W.	12	0.50	0.00	0.50	Aquatic Insect Ecology
Miller, James R.	12	0.24	0.00	0.76	Insect Behavior
Raikhel, Alexander S.	12	0.30	0.00	0.70	Insect Physiology
Scriber, J. Mark	12	0.25	0.25	0.50	Insect Ecology
Smitley, David R.	13	0.25	0.60	0.15	Landscape/Ornamental Insect Ecology
Stehr, Frederick W.	12	0.37	0.00	0.63	Insect Biocontrol Systems
Thiem, Suzanne	13	0.40	0.00	0.60	Insect Molecular Biology
Walker, Edward D.	13	0.33	0.33	0.34	Medical/Veterinary Entomology
Zabik, Matthew J.	12	0.10	0.00	0.90	Environmental Toxicology
<b>TOTALS:</b>		<b>5.83</b>	<b>3.24</b>	<b>9.93</b>	

## PROJECTS

MICL01067*	Climate and Agricultural Landscape Productivity Analysis and Assessment in the North Central Region	Gage, S.
MICL01563*	Spatial Dynamics of Leafhopper Pests and Their Management on Alfalfa	DiFonzo, C.
MICL01584*	Biological and Cultural Management of Plant-Parasitic Nematodes	Bird, G.
MICL01606	Biological Control and Integrated Management of Insects in Nurseries, Turf and the Urban Forest	Smitley, D.
MICL01640*	Ecology and Management of European Corn Borer and Other Stalk-Boring Lepidoptera	Landis, D.
MICL01644	Plant Chemical Defenses: Insect Detoxication and Ecological Factors Affecting Gene Flow and Host Selection/Hybrid Zone	Scriber, J.
MICL01663	Biology and Management of Insect Pests of Vegetable Crops	Grafius, E.
MICL01700	Ecology and Management of Forest Insects in Michigan	McCullough, D.
MICL01722*	Ecology and Impact of Gypsy Moth Invasion	Scriber, J.
MICL01733	Mechanisms of Baculovirus Pathogenesis in Insects	Thiem, S.
MICL01734	Diet Choice and Foraging in Ants	Bristow, C.
MICL01741*	Overwinter Survival of Heterodera, Pratylenchus and Associated Nematodes in the North Central Region	Bird, G.
MICL01742	Molecular Basis of Insect Reproduction	Raikhel, A.
MICL01745	The Center for the Study of Insect Diversity	Stehr, F.
MICL01783	Influence of Agricultural Landscape Structure on Biological Control of Pests by Insects	Landis, D.
MICL01792	Physiological Basis for Integrated Approach Towards Sustainable Management of Plant Parasitic Nematodes	Melakeberhan, H.
MICL01813*	Genetic Variability in the Cyst and Root-Knot Nematodes	Melakeberhan, H.
MICL01814	Factors Regulating Insect Host-Plant Colonization	Miller, J.
MICL01826	Development of Bee Forage Systems	Ayers, G.
MICL03338	Ecology and Management of Arthropod Vector Populations and Vector-Borne Diseases	Walker, E.
MICL03361	Biology and Control of Biting Flies in Michigan	Merritt, R.
MICL07627	New Technology for Pheromone Mating Disruption in Michigan Orchards	Isaacs, R.
MICL08189	Managing Natural and Engineering Resistance in Potato to Colorado Potato Beetle	Grafius, E.
MICL08192	Influence of Perennial Habitats Including High-Value Woody Species on Natural Enemies of Crop Pests	Landis, D.

# Family and Child Ecology

Phone: 355-7680



Marjorie J. Kostelnik,  
Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Imig, David R.	12	0.25	0.00	0.75	Family Ecology
Keefe, Dennis R.	14	0.50	0.00	0.50	Family Economics
Keith, Joanne G.	12	0.10	0.80	0.10	Human Development/Family
Schiamberg, Lawrence R.	12	0.30	0.00	0.70	Human Development/Family
Walker, Rosemary A.	12	0.50	0.00	0.50	Family Economics
<b>TOTALS:</b>		<b>1.65</b>	<b>0.80</b>	<b>2.55</b>	

## PROJECTS

MICL01523*	Family Business: Interaction in Work and Family Spheres	Walker, R.
MICL01786	Determinants of Small Family Business Outcomes	Walker, R.
MICL01841	Identification and Evaluation of Internal and External Assets in the Lives of Children and Adolescents	Keith, J.
MICL03349	The Study of Family Social Capital in Rural Michigan Communities	Imig, D.
MICL03368	Family-Environment Transactions: Effects on Economic Well-Being and Michigan Families' Life Quality	Keefe, D.

# Fisheries and Wildlife

Phone: 355-4477



William W. Taylor,  
Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bence, James R. <sup>6</sup>	14	0.75	0.20	0.05	Fish Population Dynamics
Bremigan, Mary T. <sup>6</sup>	14	0.60	0.00	0.40	Fish Management
Campa, Henry III	13	0.50	0.00	0.50	Wildlife Habitat Ecology
Coon, Thomas G.	13	0.20	0.00	0.80	Fish Ecology/Stream Management
Garling, Donald L.	12	0.30	0.50	0.20	Aquaculture
Hayes, Daniel B. <sup>6</sup>	14	0.75	0.20	0.05	Stream Fisheries Biology
Jones, Michael L. <sup>6</sup>	13	0.75	0.20	0.05	Fisheries Stream Models
Li, Weiming <sup>6</sup>	14	0.75	0.20	0.05	Fish Physiology
Liu, Jianguo <sup>6</sup>	14	0.75	0.20	0.05	Wildlife Systems Models
Peyton, R. Benny	12	0.42	0.00	0.58	Human Dimensions



	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Prince, Harold H.	12	0.75	0.00	0.25	Waterfowl/Wetlands
Scribner, Kim T. <sup>6</sup>	14	0.75	0.20	0.05	Molecular Ecology
Soranno, Patricia A.	14	0.50	0.00	0.50	Limnology
Winterstein, Scott R.	13	0.50	0.00	0.50	Wildlife Biometry
<b>TOTALS:</b>		<b>8.27</b>	<b>1.70</b>	<b>4.03</b>	
<i>Adjustment for PERM Positions</i>		<i>-5.10</i>	<i>-1.20</i>	<i>-0.70</i>	
<b>ADJUSTED TOTALS</b>		<b>3.17</b>	<b>0.50</b>	<b>3.33</b>	

PROJECTS		
MICL01540	Ecology, Population Dynamics and Management of Michigan Great Lakes Fisheries Resources	Taylor, W.
MICL01646	Wildlife Responses to Habitat Management	Campa, H.
MICL01719	Management of Forests and Wildlife for Multiple Use Benefits	Campa, H.
MICL01739	Improving Public Involvement in Agricultural and Natural Resource Issues	Peyton, R.
MICL01740	Development of Commercial Fish Culture Techniques	Garling, D.
MICL01758	Relationship Between Habitat Characteristics and Fish Population Dynamics	Hayes, D.
MICL01759	Tools and Information for Holistic Management of Great Lakes' Fisheries	Bence, J.
MICL01785	Systems Modeling of Wildlife Dynamics Across Heterogeneous Landscapes	Liu, J.
MICL01868	The Influence of Landscapes and Biological Communities on Freshwater Ecosystems	Soranno, P.
MICL01893	Uncertainty and the Management of Great Lakes Fisheries	Jones, M.
MICL01894	Intraspecific Chemical Communication of Fish	Li, W.
MICL10006	Regional Aquaculture Center	Batterson, T.
MICL10007	Regional Aquaculture Center	Batterson, T.
MICL10008	Regional Aquaculture Center	Batterson, T.
MICL10009	Regional Aquaculture Center	Batterson, T.
MICL10010	Regional Aquaculture Center	Batterson, T.

## Food Science and Human Nutrition

Phone: 355-8474



Mark A. Uebersax,  
Chair

FACULTY						
	RANK	MAES	MSUE	JOINT	AREA OF INTEREST	
Bennink, Maurice R.	12	0.50	0.00	0.50	Nutritional Biochemistry	
Bond, Jenny T.	12	0.20	0.00	0.80	Prenatal/Postnatal Nutrition	
Booren, Alden M.	12	0.15	0.75	0.10	Meat/Poultry/Fish	
Bourquin, Leslie D.	14	0.25	0.75	0.00	Food Safety	
Cash, Jerry N.	12	0.25	0.75	0.00	Fruit/Vegetable Products	
Chenoweth, Wanda L.	12	0.25	0.00	0.75	Clinical Nutrition	
Doumit, Matthew E.	14	0.25	0.00	0.75	Meat Quality	
Fraker, Pamela J.	12	0.20	0.00	0.80	Cellular Immunology	
Hoerr, Sharon M.	12	0.40	0.00	0.60	Community Nutrition	
Hord, Norman	14	0.25	0.00	0.75	Nutritional Epidemiology	
Linz, John E.	12	0.50	0.00	0.50	Food Microbiology	
Ng, Perry K. W.	13	0.50	0.00	0.50	Cereal Science	
Ofoli, Robert Y.	13	0.49	0.00	0.51	Colloid/Interface Science	
Osburn, Wesley N.	14	0.15	0.00	0.85	Meat/Poultry Production	

# Food Science and Human Nutrition (continued)

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Pestka, James J.	12	0.62	0.00	0.38	Food Microbiology
Price, James F.	12	0.54	0.00	0.46	Meat/Poultry Products
Romsos, Dale R.	12	0.50	0.00	0.50	Lipid Metabolism
Ryser, Elliott T.	14	0.53	0.00	0.47	Dairy Foods
Schemmel, Rachelle A.	12	0.30	0.00	0.70	Clinical Nutrition
Schroeder, Joseph J.	14	0.50	0.00	0.50	Nutritional Biochemistry; Bioactive Lipids
Smith, Denise M.	12	0.67	0.00	0.33	Poultry/Egg Products
Song, Won O.	12	0.40	0.00	0.60	Nutritional Assessment
Steffe, James F.	12	0.25	0.00	0.75	Food Engineering/Rheology
Strasburg, Gale M.	13	0.65	0.00	0.35	Muscle Biochemistry
Ustunol, Zeynep	13	0.72	0.00	0.28	Dairy Foods
Zabik, Mary E.	12	0.19	0.00	0.81	Foods
Zile, Maija H.	12	0.50	0.00	0.50	Nutrition
<b>TOTALS:</b>		<b>10.71</b>	<b>2.25</b>	<b>14.04</b>	

## PROJECTS

MICL01209	Quality and Safety of Fresh and Processed Meat Products	Price, J.
MICL01323	Improving Process Efficiency, Product Quality and Nutrient Composition of Fruit and Vegetable Products	Uebersax, M.
MICL01413	Metabolism and Function of Vitamin A	Zile, M.
MICL01419	Processing Treatments Influencing Functional Properties and Utilization of Muscle Foods	Booren, A.
MICL01444*	Role of N-3/N-6 Polyunsaturated Fatty Acids in Health Maintenance	Romsos, D.
MICL01448	Microbial Food-Borne Disease	Pestka, J.
MICL01478*	Genetic Improvement of Beans ( <i>Phaseolus vulgaris</i> L.) for Yield, Pest Resistance and Food Value	Uebersax, M.
MICL01532*	Functional Properties of Food Proteins	Smith, D.
MICL01599	Regulation of Calcium in Muscle Sarcoplasm	Strasburg, G.
MICL01623	Comparative Aspects of Nutrition and Lipid Metabolism	Romsos, D.
MICL01632	Improving the Quality and Safety of Value-Added Meat and Poultry Products	Smith, D.
MICL01664	Development, Quality and Safety of Value-Added Dairy and Dairy-Based Products	Ustunol, Z.
MICL01665	Nutritional Assessment in Population-Based Epidemiological Studies	Song, W.
MICL01694*	Nutrient Bioavailability: A Key To Human Nutrition	Chenoweth, W.
MICL01699	Molecular Structure of Soft Wheat Proteins in Relation to End-Use Quality	Ng, P.
MICL01706	Interactions of Biological Macromolecules at the Liquid-Liquid Interface	Ofoli, R.
MICL01715*	Improve Food Safety Through Discovery and Control of Natural and Induced Toxicants and Antitoxicants	Pestka, J.
MICL01762	Relationship of Diet and Cancer	Bennink, M.
MICL01764	Quality and Safety of Processed Foods	Gray, J.
MICL01791	Processing and Quality Evaluation of Fruits and Vegetables	Cash, J.
MICL01795	Modulation of Colon and Breast Cancer Cell Growth by Sphingolipids	Schroeder, J.
MICL01804*	Using Stages of Change Model to Promote Consumption of Grains, Vegetables and Fruits by Young Adults	Hoerr, S.
MICL01856	Aflatoxin B1 Biosynthesis in <i>Aspergillus</i>	Linz, J.
MICL01878	Reducing Dietary Risk for Chronic Disease Via a Behavioral Approach in High Risk Populations	Hoerr, S.
MICL01887*	Enhancing Food Safety Through Control of Food-Borne Disease Agents	Linz, J.
MICL01895	Influence of Diet and Phytochemicals on Colon Carcinogenesis	Bourquin, L.



# Food Science and Human Nutrition (continued)

MICL03363	Food Industry Institute
MICL03370	Food Safety Issues for Michigan Consumers
MICL03371	Targeting Michigan Groups at Nutritional/Health Risk: Identifying Needs, Intervention Strategies and Outcomes
MICL06885	Apoptosis and Sphingolipids in Fumonisin-Induced Kidney Cell Death
MICL08144	Effects of Lactic Cultures on Gastrointestinal Immune Function
MICL08181	ELISA to Determine Adequacy of Cooking to USDA Beef Time/Temperature Schedules
MICL08191	Metabolism and Function of Retinoic Acid in Quail Embryogenesis
MICL08195	Biochemical Characterization of Pale, Soft, Exudative Turkey
MICL08196	Recombinant Antibodies for Natural Toxicants

Hegarty, P.  
Zabik, M.  
  
Bond, J.  
Schroeder, J.  
Pestka, J.  
Smith, D.  
Zile, M.  
Strasburg, G.  
Pestka, J.

## Forestry

Phone: 355-0091



Daniel E. Keathley,  
Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Dickmann, Donald I.	12	0.70	0.00	0.30	Fire Ecology
Epperson, Bryan K.	13	0.70	0.00	0.30	Forest Genetics
Fried, Jeremy S.	13	0.60	0.00	0.40	Forest Management
Hart, James B., Jr.	13	0.50	0.00	0.50	Forest Soils
Kamdem, Donatien-Pascal	13	0.70	0.00	0.30	Wood Science
Kielbaso, Julian J.	12	0.15	0.25	0.60	Urban Forestry
Kobe, Richard K.	14	0.70	0.00	0.30	Forest Ecology
Lantagne, Douglas O.	13	0.20	0.80	0.00	Silviculture
Leefers, Larry A.	13	0.50	0.00	0.50	Forest Economics
McDonough, Maureen H.	12	0.15	0.50	0.35	Forest Sociology
Potter-Witter, Karen L.	13	0.55	0.35	0.10	Forest Economics
Ramm, Carl W.	13	0.60	0.00	0.40	Forest Biometrics
Walters, Michael B. <sup>6</sup>	14	0.75	0.20	0.05	Forest Ecology
<b>TOTALS:</b>		<b>6.80</b>	<b>2.10</b>	<b>4.10</b>	
<i>Adjustment for PERM Positions</i>		<i>-0.75</i>	<i>-0.20</i>	<i>-0.05</i>	
<b>ADJUSTED TOTALS</b>		<b>6.05</b>	<b>1.90</b>	<b>4.05</b>	

### PROJECTS

MICL01148	Evaluation of Natural Control for Gypsy Moth in Southern Michigan
MICL01432	Attitudes Toward Natural Resources and the Environment in the 1990s: A Representative Approach
MICL01693*	The National Atmospheric Deposition Program (NADP)
MICL01748	Economic Evaluation of Forest Management Opportunities: Supply/Demand Modeling of Michigan Stumpage Markets
MICL01749	Assessment of Effects of Prescribed Burning on Fine Roots in a Mature Red Pine Stand
MICL01750	Production and Trade Flow of Michigan Forest Products
MICL01755	Incorporating GIS into Bio-Social Analysis for Ecosystem Management
MICL01773	Testing Lake States TWIGS: Five and Ten Year Growth Projections for Upland Hardwoods
MICL01774	Managing the Genetic Diversity of Michigan Pines

Ramm, C.  
  
McDonough, M.  
Kobe, R.  
  
Potter-Witter, K.  
Dickmann, D.  
Stevens, J.  
Fried, J.  
Ramm, C.  
Epperson, B.

## Forestry (continued)

MICL01805	Bioremediation of Condensate Produced During Conditioning of Veneer Logs	Kamdem, D.
MICL01811	Incorporating Risk, Natural Resources Accounting and Hedonic Valuation in Forestry Decisions	Leefers, L.
MICL01812	Municipal Tree Management	Kielbaso, J.
MICL01845	Long-Term Diameter, Basal Area and Ordered Categorical Responses of Oak and Hardwood Forests	Hart, J.
MICL01869	Forest Management for the Regeneration of Hardwoods and Conifers	Lantagne, D.
MICL01871	Modeling Landscape-Level Variation in Forest Community Dynamics	Kobe, R.
MICL07607	Advanced Technology Application to Eastern Hardwood Utilization	Suchsland, O.
MICL07609	Advanced Technology Application to Eastern Hardwood Utilization	Suchsland, O.
MICL07615	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdem, D.
MICL07623	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdem, D.
MICL07631	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdem, D.

## Geography

Phone: 355-4649

### PROJECTS

MICL03373	Impacts of Weather and Climate on Michigan Agriculture	Andresen, J.
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## Horticulture

Phone: 355-5191



Wayne H. Loescher,  
Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Beaudry, Randolph M.	13	0.50	0.50	0.00	Postharvest Fruit Physiology
Behe, Bridget K.	13	0.25	0.00	0.75	Horticulture Marketing
Biernbaum, John A.	12	0.20	0.00	0.80	Plant Physiology/Floriculture
Cameron, Arthur C.	12	0.70	0.00	0.30	Plant Physiology/Landscape Horticulture
Carlson, William H.	12	0.35	0.50	0.15	Floriculture/Physiology & Bedding
Dilley, David R.	12	0.80	0.00	0.20	Postharvest Physiology/Pomology



Flore, James A.	12	0.65	0.00	0.35	Plant Physiology/Pomology
Grumet, Rebecca	13	0.90	0.00	0.10	Vegetable Breeding/Genetics
Hancock, James F.	12	0.90	0.00	0.10	Small Fruit Breeding/Genetics
Hanson, Eric J.	12	0.35	0.65	0.00	Pomology Small Fruits
Heins, Royal D.	12	0.75	0.00	0.25	Plant Physiology/Floriculture
Herner, Robert C.	12	0.35	0.00	0.65	Postharvest Physiology/Vegetable Crop
Howell, Gordon S.	12	0.80	0.00	0.20	Plant Physiology/Viticulture/Enology
Iezzoni, Amy F.	12	0.80	0.00	0.20	Fruit Breeding/Genetics
Kelly, John F.	12	0.66	0.11	0.23	Vegetable Composition
Lownds, Norman K.	14	0.25	0.00	0.75	Landscape Horticulture/Stress Physiology
Nair, Muraleedharan G.	12	0.90	0.00	0.10	Natural Products/Chemistry
Perry, Ronald L.	12	0.50	0.50	0.00	Pomology/Rootstocks
Rowe, D. Bradley	14	0.25	0.00	0.75	Landscape Horticulture
Schutzki, Robert E.	13	0.10	0.00	0.90	Landscape Horticulture
Sink, Kenneth C.	12	0.75	0.00	0.25	Genetics/Plant Breeding
van Nocker, Steven R.	14	0.75	0.00	0.25	Reproductive Development/Genetics
Widders, Irvin E.	12	0.67	0.00	0.33	Vegetable Physiology
Zabadal, Thomas J.	13	0.50	0.50	0.00	Viticulture
Zandstra, Bernard H.	12	0.25	0.75	0.00	Vegetable Crops
<b>TOTALS:</b>		<b>13.88</b>	<b>3.51</b>	<b>7.61</b>	

## PROJECTS

MICL01155*	Postharvest Physiology of Fruits	Dilley, D.
MICL01222*	Plant Germ Plasm and Information Management and Utilization	Iezzoni, A.
MICL01272	Physiology of Carbon Balance in Fruit Crops: Abiotic and Biotic Thresholds	Flore, J.
MICL01305*	Rootstock and Interstem Effects on Pome and Stone Fruit Trees	Perry, R.
MICL01325	Weed Control in Vegetable Crop Management Systems	Zandstra, B.
MICL01428	Sour Cherry and Peach Breeding and Genetics	Iezzoni, A.
MICL01461*	Freeze Damage and Protection of Fruit and Nut Crops	Howell, G.
MICL01468	Role of Ion Flux and Compartmentation in the Transduction of Environmentally Elicited Signals	Widders, I.
MICL01517	Optimization of the Root Zone Environment in Greenhouse Crop Production	Biernbaum, J.
MICL01607	Physiological Adaptation and Cultural Manipulation of Plant Systems	Schutzki, R.
MICL01680	Biologically Active Natural Products and Value-Added Products From Plants and Microbes for Agricultural and Pharmaceutical Use	Nair, M.
MICL01684	Modified Atmosphere Packaging of Horticultural Produce	Cameron, A.
MICL01697*	Decision Support for Design and Control of Plant Growth Systems	Heins, R.
MICL01731	Breeding and Genetic Studies for Selected Horticultural Crops	Sink, K.
MICL01743	Chemical Regulation of Plant Growth, Quality and Yield	Ries, S.
MICL01753	Application of Molecular Genetic Approaches to Vegetable Crop Improvement	Grumet, R.
MICL01778	Environmental and Physiological Variables Effect on Growth, Quality, and Marketability of Garden Crop	Carlson, W.
MICL01810	Genetic Improvement of Strawberries and Blueberries	Hancock, J.
MICL01824	Physiological and Environmental Factors Influencing Growth and Development of Flower Crops	Heins, R.
MICL01839	Efficient Use of Fertilizers in Fruit Production	Hanson, E.
MICL01846	Tomato Ripening Mutants	Herner, R.
MICL01848	Enhancement of Control Over Quality Loss in Horticultural Commodities Following Harvest	Beaudry, R.
MICL03218	Vine Culture and Physiology for Best Yield, Fruit Quality and Adaptation to Environmental Stresses	Howell, G.

## Horticulture (continued)

MICL03305	Viticultural Practices for Mechanical Pruning and Crop Control of Concord and Niagara Grapevines	Zabadal, T.
MICL07622	Safeguarding the Supply of Specialty Crops for Consumers	Flore, J.
MICL08125	Effect of Salinity Stress on Regulation of Mannitol Metabolism	Loescher, W.
MICL08187	CO <sub>2</sub> Role in Reaction Mechanism of ACC Oxidase in Ethylene Biosynthesis	Dilley, D.
MICL08202	Relationship Between Genetic and Hormonal Control of Sex Expression in Cucumis Species	Grumet, R.

## Human Environment and Design

Phone: 355-7712



Dana G. Stewart, Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Pysarchik, Dawn I.	13	0.31	0.00	0.69	Merchandising Management
Slocum, Ann C.	13	0.25	0.00	0.75	Apparel Design & Textiles
Sontag, M. Suzanne	12	0.25	0.00	0.75	Apparel Design & Textiles
Sternquist, Brenda J.	12	0.25	0.00	0.75	Merchandising Management
<b>TOTALS:</b>		<b>1.06</b>	<b>0.00</b>	<b>2.94</b>	

### PROJECTS

MICL01442*	Occupational Safety and Health Through the Use of Protective Clothing	Slocum, A.
MICL01775	Processed Foods in India: Consumer Demand and Distribution Systems	Pysarchik, D.
MICL01833	Emerging Free Markets: The Role of Federal vs. Municipal Approved Retail Joint Ventures	Sternquist, B.
MICL03357	Needs of the Michigan Textile/Apparel Industry: Characterization, Assessment and Response Strategies	Sontag, M.
MICL08209	The Food Retailing Industry In People's Republic of China: A Comparison of Behavioral Relationships	Sternquist, B.

## Kellogg Biological Station

Phone: 616-671-5117



Michael J. Klug, Director

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bush, Guy L.	12	0.10	0.00	0.90	Genetics
<b>TOTALS:</b>		<b>0.10</b>	<b>0.00</b>	<b>0.90</b>	

### PROJECTS

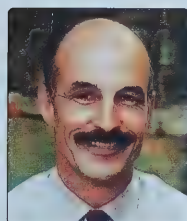
MICL08188	Closing Global Nitrous Oxide Cycle: Mechanistic Understanding Flux Partitioning Agricultural Landscapes	Robertson, G.
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## Large Animal Clinical Sciences

Phone: 355-9593



Frederik J. Derksen,  
Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Baker, John C.	12	0.20	0.00	0.80	Bovine Respiratory Diseases
Erskine, Ronald J.	13	0.25	0.33	0.42	Dairy Cattle Mastitis
Gomez-Duran, Charles O.	14	0.50	0.30	0.20	Swine Veterinary Medicine
Grooms, Daniel L.	14	0.50	0.50	0.00	Beef Disease Management
Herd, Thomas H.	12	0.25	0.00	0.75	Cattle Nutrition & Metabolic Diseases
Holland, Robert E.	13	0.34	0.00	0.66	Bovine Enteric Disease
Kaneene, John B.	12	0.14	0.00	0.86	Epidemiology/Disease Impact
Robinson, Norman E.	12	0.25	0.00	0.75	Respiratory Physiology
Rook, Joseph S.	12	0.40	0.40	0.20	Small Ruminant Animals
Sears, Phillip M.	12	0.35	0.35	0.30	Dairy Disease Management
Straw, Barbara E.	12	0.28	0.50	0.22	Swine Veterinary Medicine
<b>TOTALS:</b>		<b>3.46</b>	<b>2.38</b>	<b>5.16</b>	

### PROJECTS

MICL01417*	Bovine Respiratory Disease: Risk Factors, Pathogens, Diagnosis and Management	Baker, J.
MICL01688*	Mastitis Resistance to Enhance Dairy Food Safety	Erskine, R.
MICL01708	Pre-Harvest Food Safety in Dairy Cattle: Reducing Risks Related to Mastitis	Erskine, R.
MICL01801	Total Quality Management for Disease Control on Swine Farms	Straw, B.
MICL01819	Nutritional Assessment of Animals and Animal Populations by Laboratory Means	Herd, T.
MICL01820	Assessment and Control of Enteric Pathogens Among Neonatal Calves	Holland, R.
MICL03354	Implementing Food Safety Through Total Quality Management on Michigan Dairy Farms	Sears, P.
MICL03355	Perinatal Lamb Mortality and Production Issues Associated With Pasture Lambing Systems in Michigan	Rook, J.
MICL06878	Persistent Infection With Bovine Viral Diarrhea Virus (BVDV): Diagnosis, Epidemiology and Control	Baker, J.
MICL06879	Is the Dairy Quality Assurance Program Effective in Reducing Drug Residues in Milk?	Kaneene, J.
MICL06881	Testing of a New Tool to Quantitate Cytokine Gene Expression in Swine	Mansfield, L.
MICL06886	Mucus Secretion in Horse Airways	Robinson, N.
MICL06887	Characterization of a Novel Equine Cartilage Matrix Metalloprotease	Caron, J.
MICL07610	Minor Use Animal Drug Program: North Central Region	Holland, R.
MICL07630	Minor Use Animal Drug Program: North Central Region	Holland, R.



# Microbiology

Phone: 355-6463



Jerry B. Dodgson, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bagdasarian, Michael	12	0.39	0.00	0.61	Molecular Biology
Breznak, John A.	12	0.30	0.00	0.70	Microbial Ecology
Champness, Wendy C.	13	0.50	0.00	0.50	Microbial Genetics
Dazzo, Frank B.	12	0.80	0.00	0.20	Microbial Ecology
de Bruijn, Frans J.	12	0.38	0.00	0.62	Molecular Biology
Hausinger, Robert P.	12	0.40	0.00	0.60	Microbial Physiology
Klug, Michael J.	12	0.25	0.00	0.75	Microbial Ecology
Maes, Roger K.	12	0.03	0.00	0.97	Virology
Reddy, C. Adinarayana	12	0.46	0.00	0.54	Microbial Physiology/Ecology
Schmidt, Thomas M.	14	0.40	0.00	0.60	Microbial Ecology
Thomashow, Michael F.	12	0.14	0.00	0.86	Plant & Microbial Molecular Genetics
Tiedje, James M.	12	0.15	0.00	0.85	Soil Microbiology
Velicer, Leland F.	12	0.30	0.00	0.70	Virology
<b>TOTALS:</b>		<b>4.50</b>	<b>0.00</b>	<b>8.50</b>	

## PROJECTS

MICL01154*	Enteric Diseases of Swine and Cattle: Prevention, Control and Food Safety	Maes, R.
MICL01314	Symbiotic Infection of Legume Roots by Nitrogen-Fixing Rhizobium	Dazzo, F.
MICL01557	Molecular Genetic Regulation of Streptomyces Antibiotics	Champness, W.
MICL01593*	Advanced Technologies for the Genetic Improvement of Poultry	Dodgson, J.
MICL01628	Analysis of the Genes of Marek's Disease Herpesvirus and the Proteins They Encode	Velicer, L.
MICL01629	Lignin Degradation by Basidiomycete Fungi and Applications	Reddy, C.
MICL01681	Molecular Basis of Symbiotic Plant-Microbe Interactions	de Bruijn, F.
MICL01728*	National Animal Genome Research Project	Dodgson, J.
MICL01757	Analysis of Ribosomal RNA Genes and Operons in Microbial Ecology and Evolution	Schmidt, T.
MICL01771	Spatial and Temporal Patterns of C, N and Soil Microbial Communities in Agricultural Soils	Klug, M.
MICL01834	Molecular Mechanisms Involved in the Secretion of Pathogenicity Factors Through Bacterial Membranes	Bagdasarian, M.
MICL01857	Physiology and Phylogenetic Diversity of Termite Gut Symbionts	Breznak, J.
MICL08161	The Regulation of Herbicide Degrading Operons in Soil Bacteria	Wright, A.
MICL08163	Bioproduction of Carveol and Perillyl Alcohol From Limonene	Oriel, P.
MICL08165	Urease Structures, Mechanism, and Inhibition	Hausinger, R.
MICL08170	Development of Enterotoxin B Subunit as Carrier of Foreign Antigenic Epitopes	Bagdasarian, M.
MICL08175	<i>In vivo</i> Expressed Genes of <i>Actinobacillus pleuropneumoniae</i>	Mulks, M.
MICL08182	Cloning of an Alternative Oxidase Regulatory Gene From <i>Neurospora</i>	Bertrand, H.
MICL08183	Fluorescent Protein Time-Temperature Integrator for Thermal Process Monitoring	Merrill, J.
MICL08199	Chicken Genome Mapping Using AFLP and Anchor STS Markers	Dodgson, J.



# MSU Extension

Phone: 355-2308

## PROJECTS

MICL07628	Management of the North Central Regional Pesticide Impact Assessment Program (NCPIAP) for FY98	Olsen, L.
MICL09007	Overseas Technical Cooperation Impact Study: Evaluation of Impact of Overseas Assignments	Andrews, M.

## National Food Safety and Toxicology Center

Phone: 432-3100



Robert M. Hollingworth,  
Director

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Giesy, John P.	12	0.25	0.00	0.75	Aquatic Toxicology
Zabik, Matthew J.	12	0.84	0.00	0.16	Chemical Fate/Residue Analysis
Zacharewski, Timothy R.	14	0.20	0.00	0.80	Biochemical Toxicology
<b>TOTALS:</b>		<b>1.29</b>	<b>0.00</b>	<b>1.71</b>	

## PROJECTS

MICL01730*	A National Agricultural Program to Clear Pest Control Agents for Minor Uses	Hollingworth, R.
MICL01849	Environmental Dynamics of Xenobiotics in the Environment and Analytical Methods Development	Zabik, M.
MICL03364	Improved Microbial Food Safety Through Risk Assessment, Management, Communication and Analysis	Mather, E.
MICL03367	Microbial and Chemical Safety of the U.S. Food Supply	Hollingworth, R.
MICL07613	NC Region IR-4 Leader Lab Program to Clear Pest Control Agents for Minor Uses	Hollingworth, R.
MICL07629	Minor Use Animal Drug Program: Headquarters	Hollingworth, R.

## Packaging

Phone: 355-9580



Bruce R. Harte, Director

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Clarke, Robert	14	0.50	0.00	0.50	Manufacturing Operations
Downes, Theron W.	12	0.20	0.00	0.80	Packaged Food Quality
Giacin, Jack R.	12	0.59	0.00	0.41	Package Product Interaction
Hernandez, Ruben J.	13	0.25	0.00	0.75	Package Product Interaction
Lee, Julian J. L.	13	0.20	0.00	0.80	CAP/MAP & Protective Packaging
Singh, Sher Paul	13	0.20	0.00	0.80	Distribution/Transportation/Environmental Measuring/Packaging Dynamics
<b>TOTALS:</b>		<b>1.94</b>	<b>0.00</b>	<b>4.06</b>	

## PROJECTS

MICL01520	Transport Properties of Polymer Films as Related to Quality and Storage Stability of Packaged Products	Giacin, J.
MICL01735	Effect of Packaging on Reducing Physical Damage to Fresh Produce Due to Transport Vibration	Singh, S.

Packaging (continued)

MICL01736	Quality Retention in Packaged Food	Downes, T.
MICL01828	Improving the Quality of Products and Distribution Productivity Through Packaging Innovation	Twede, D.
MICL01831	Design of Plastic Packages for Preserving the Quality and Safety of Food Products	Hernandez, R.
MICL01840	Controlled Atmosphere and Modified Atmosphere Packaging of Fresh Produce	Lee, J.

Park, Recreation and Tourism Resources

Phone: 353-5190



Joseph D. Fridgen, Chair

FACULTY					
	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Holecek, Donald F.	12	0.75	0.25	0.00	Resource Economics/Tourism
Nelson, Charles M.	13	0.25	0.00	0.75	Natural Resource Management
Propst, Dennis B.	13	0.50	0.00	0.50	Psychology/Planning/Economics
Stynes, Daniel J.	12	0.50	0.00	0.50	System Analysis/Research Methods/Economics
Vander Stoep, Gail A.	13	0.25	0.25	0.50	Communications/Human Dimensions
<b>TOTALS:</b>		<b>2.25</b>	<b>0.50</b>	<b>2.25</b>	

PROJECTS		
MICL01763	Influences of Natural Resource Recreation on Land Management in Michigan	Nelson, C.
MICL01766	Social Science and Communications in Outdoor Recreation Resource Management	Vander Stoep, G.
MICL03280	Travel, Tourism and Recreation Resource Center	Holecek, D.
MICL03362	Economic Impacts of Recreational Tourism	Stynes, D.



# Pathology

Phone: 353-9160



Willie M. Reed, Interim  
Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bell, Thomas G.	12	0.25	0.00	0.75	Comparative Pathology/Platelet Function
Harkema, Jack	12	0.31	0.00	0.69	Toxicology
Holland, Margo S.	14	0.30	0.00	0.70	Molecular Pathology
Padgett, George A.	12	0.25	0.00	0.75	Comparative Veterinary Pathology
Patterson, Jon S.	13	0.25	0.00	0.75	Veterinary Pathology/Infectious Disease/Animals
<b>TOTALS:</b>		<b>1.36</b>	<b>0.00</b>	<b>3.64</b>	

## PROJECTS

MICL01720	Immunohistochemical Diagnosis of Infectious Diseases	Patterson, J.
MICL01776	Effects of Endotoxin and Other Organic Dust Constituents on Airway Mucous Cells	Harkema, J.
MICL01847	Osteochondrosis: Development of Procedures to Control or Mitigate the Effects of This Disease	Padgett, G.
MICL01882	Molecular Aspects of Marek's Disease Virus Oncogenicity	Holland, M.
MICL06882	Hemorrhagic Disorder in Noncytopathic Type II Bovine Virus Diarrhea Viral Infection	Bell, T.

# Pesticide Research Center

Phone: 353-9430



Mark E. Whalon, Acting  
Director

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
DiFonzo, Christina D.	14	0.10	0.40	0.50	Field Crop Entomology/Pesticide Education Coordinator
Edson, Charles E.	13	0.25	0.75	0.00	Acting IPM Coordinator
<b>TOTALS:</b>		<b>0.35</b>	<b>1.15</b>	<b>0.50</b>	

## PROJECTS

MICL03365	Biology and Management of Insects in Michigan Field Crops	DiFonzo, C.
MICL07604	Minor Use Animal Drug Program — Headquarters	Hollingworth, R.
MICL07616	An Integrated Crop Management System to Reduce Pesticide Use in Asparagus Production	Edson, C.
MICL07617	Michigan's CSREES NAPIAP Program — 1997	Olsen, L.
MICL08155	Orchard Floor Management Systems to Reduce Herbicide Use in Deciduous Tree Fruit Production in NC Region	Edson, C.

# Physiology

Phone: 355-6475



Photo by Bob Neumann



William S. Spielman,  
Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Dukelow, W. Richard	12	0.40	0.00	0.60	Reproductive Physiology
Jump, Donald B.	12	0.50	0.00	0.50	Molecular Endocrinology
<b>TOTALS:</b>		<b>0.90</b>	<b>0.00</b>	<b>1.10</b>	

## PROJECTS

MICL08205 Dietary Fat Regulation of Hepatic Glycolytic Gene Expression

Jump, D.

# Plant Research Lab (MSU-DOE)

Phone: 353-2270



Kenneth Keegstra,  
Director

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
de Bruijn, Frans J.	12	0.38	0.00	0.62	Molecular Biology
Howe, Gregg A.	14	0.23	0.00	0.77	Plant/Insect Defense
Walton, Jonathan D.	12	0.23	0.00	0.77	Plant Pathology
<b>TOTALS:</b>		<b>0.84</b>	<b>0.00</b>	<b>2.16</b>	

## PROJECTS

MICL01886 Mechanisms of Fungal Pathogenicity  
 MICL08149 Photoperiodic Control of Gibberellin Metabolism in Long-Day Rosette Plants  
 MICL08169 Analysis of Senescence-Inducible Ribonuclease in Tomato  
 MICL08177 *Pseudomonas syringae* pv. Tomato Extracellular Proteins Controlled by the Hrp System  
 MICL08178 Control of mRNA Stability in Dicotyledonous Plants  
 MICL08184 Role of Cell-Wall-Degrading Enzymes in Plant Pathogenesis  
 MICL08197 Photoperiodic Control of Gibberellin Metabolism in Long-Day Rosette Plants

Walton, J.  
 Zeevaart, J.  
 Green, P.  
 He, S.  
 Green, P.  
 Walton, J.  
 Zeevaart, J.



# Remote Sensing (Center for)

Phone: 353-7195



Richard E. Groop, Director

## PROJECTS

MICL01835 Applications of Spatial Information Technologies to Management of Agriculture and Natural Resources Groop, R.



Photo by Bob Neumann

## Resource Development

Phone: 355-3421



Cynthia C. Fridgen, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bingen, R. James	13	0.40	0.00	0.60	International Development
Bronstein, Daniel A.	12	0.40	0.00	0.60	Environmental Policy & Law
Dersch, Eckhart	12	0.25	0.50	0.25	Natural Resources Management
Edens, Thomas C.	12	0.55	0.00	0.45	Resource Economics & Policy
Kakela, Peter J.	12	0.80	0.00	0.20	Natural Resources Management
Norris, Patricia E.	14	0.08	0.20	0.72	Land Use
Rosenbaum, Rene P.	14	0.40	0.00	0.60	Community Economic Development
Schultink, Gerhardus	12	0.50	0.00	0.50	Natural Resources Management
Witter, Scott G.	13	0.30	0.00	0.70	Natural Resources Management
<b>TOTALS:</b>		<b>3.68</b>	<b>0.70</b>	<b>4.62</b>	

## PROJECTS

MICL01536 Spatial and Temporal Indicators for Economic Development, Land Use Planning and Environmental Impact

MICL01789 Land Transformation in the Rural-Urban Interface

MICL01817 Watershed Management in the Rural/Urban Fringe

MICL01851 Water Resource Protection at the Interface of the Hydrologic Cycle and Cultural Influences

Schultink, G.

Edens, T.

Witter, S.

Dersch, E.

## Resource Development (continued)

MICL01859	Farm, Rural and Environmental Groups in Agricultural Research and Development Policy	Bingen, R.
MICL01860	Pesticide Policy Studies	Bingen, R.
MICL01870	Use of Impact Assessment in Policy Formulation	Bronstein, D.
MICL03352	Mineral Lands Development, Energy Requirements and Environmental Impacts	Kakela, P.
MICL03358	Economic Issues of Latinos in Rural Settings and Their Impact on Michigan Agriculture	Rosenbaum, R.

## Sociology

Phone: 355-6632



Christopher K. Vanderpool,  
Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Aronoff, Marilyn	13	0.25	0.00	0.75	Rural Communities/Environment
Bokemeier, Janet L.	12	0.50	0.00	0.50	Farm Family/Labor Markets
Busch, Lawrence M.	12	0.47	0.00	0.53	Agriscience Structure/Agricultural Research Policy
Harris, Craig K.	13	0.50	0.00	0.50	Sociology of Agriculture
Johnson, Nan E.	12	0.50	0.00	0.50	Demography
Rudy, Alan P.	14	0.30	0.00	0.70	Sociology of Agriculture
<b>TOTALS:</b>		<b>2.52</b>	<b>0.00</b>	<b>3.48</b>	

### PROJECTS

MICL01612	Strategic Analysis of Technical Change in Commodity Subsectors	Busch, L.
MICL01751*	Rural Labor Markets in the Global Economy	Bokemeier, J.
MICL01829*	Rural Restructuring: Causes and Consequences of Globalized Agricultural and Natural Resource Systems	Harris, C.
MICL01842*	Commodities, Consumers and Communities: Local Food Systems in a Globalizing Environment	Busch, L.
MICL01864	Rural Family Ties and Well-Being: Social Capital, Community Context and Household Strategies	Bokemeier, J.
MICL01874	Social Processes in Disability and Death for Nonmetro Americans: A Longitudinal Study	Johnson, N.
MICL03339	Rural Migration, Educational Investments and the Uneven Development of Michigan's Upper Peninsula	Schwarzweiler, H.
MICL08206	Social Reduction of Disability for Nonmetro Elders: A Longitudinal Study	Johnson, N.



# University Administration

Phone: 355-0123

## PROJECTS

MICL00842-ADM General Administration of Federal Grant Research Funds and Publications

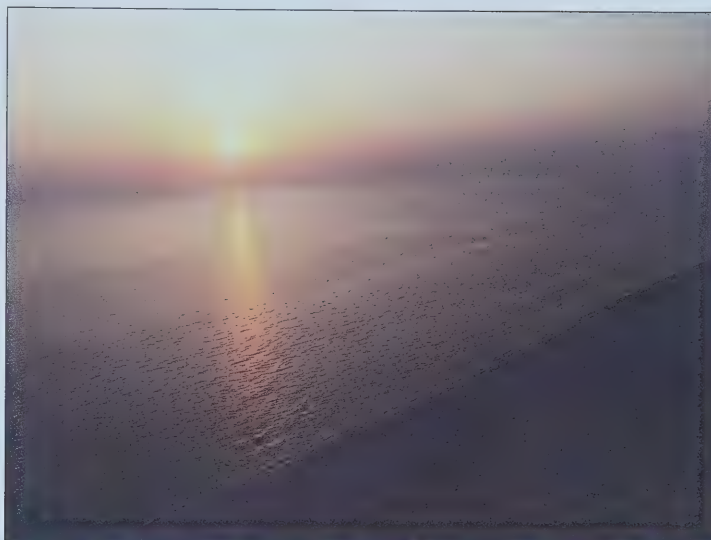
Gray, J.

MICL00881-ADM\* Planning and Coordination of Cooperative Regional Research

Gray, J.

## Water Research (Institute of)

Phone: 353-3742



Jon F. Bartholic, Director

## FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
D'Itri, Frank M.	12	0.10	0.00	0.90	Environmental Recycling
<b>TOTALS:</b>		<b>0.10</b>	<b>0.00</b>	<b>0.90</b>	

## PROJECTS

MICL01838 Development of a Knowledge-Based Decision-Support System for Integrated Landscape/  
Watershed Planning

Bartholic, J.

MICL07626 A Regional Multiagency Partnership for Improving Agriculture and Natural Resources Decisions

Bartholic, J.

## Faculty Appointments

	MAES	MSUE	JOINT
<b>GRAND TOTALS</b>	<b>133.41</b>	<b>43.20</b>	<b>134.14</b>

<sup>1</sup>Elton Smith Endowed Chair

<sup>2</sup>C.S. Mott Distinguished Professor of Sustainable Agriculture

<sup>3</sup>Hannah Professor for Microbial Ecology and Plant Sciences

<sup>4</sup>Nowlin Professor for Water Research (50 percent of the appointment is paid by the endowment)

<sup>5</sup>Clinton Meadows Chair

<sup>6</sup>Partnerships for Ecosystem Research and Management (PERM) positions with salary funded by the Michigan Department of Natural Resources

*Futures* is the quarterly magazine of the Michigan Agricultural Experiment Station (though in 1998, Vol. 15, Nos. 3 and 4, and Vol. 16, Nos. 1 and 2, were combined into one issue). To receive *Futures* free of charge, write to: *Futures* Editor, 310 Agriculture Hall, MSU, East Lansing, MI 48824-1039, call 517-432-1555, or e-mail [depolo@msue.msu.edu](mailto:depolo@msue.msu.edu). *Futures* is also available on the MAES Web site at <http://www.maes.msu.edu>.

## Fall 1997/Winter 1998 Vol. 15, Nos. 3 and 4 Helping Nature Help Itself

Much of the research funded by the Michigan Agricultural Experiment Station involves discovering ways to manage the environment and coax it into bringing forth or doing what we'd like it to do. Farmers would like to produce the highest yields possible, and they would like to do this year after year so they can provide inexpensive, healthy food to consumers. Fishing enthusiasts would like to be able to catch a variety of large, lively fish from clean, clear lakes and streams. Homeowners would like to be able to enjoy the beauty of the trees in their backyards without watching them be defoliated by a voracious mass of undulating caterpillars.

In this issue of *Futures*, we highlight several MAES projects that are working to help and restore nature, while at the same time helping people achieve their goals. For example:

- Scientists Doug Landis and Mike Klepinger are working with high school science classes to raise and release beetles to biologically control the spread of purple loosestrife. This colorful, showy plant was a favorite of residents who lived near lakes and ponds, but they soon found out that purple loosestrife was squeezing out native vegetation and wildlife. Because the beetles feed on only purple loosestrife, they may provide an ecologically benign method to curb the plant's takeover. At the same time, researchers Hal Prince and Jim Hancock are investigating whether some plants and animals are adapting their behaviors to the presence of purple loosestrife. Perhaps the story is not completely negative.
- Stuart Gage, an entomologist, and Jeremy Fried, a forestry scientist, are each using geographical information system (GIS) software to help manage ecosystems. Gage has been using GIS to model the spread of gypsy moth caterpillars across the state; Fried has been using the software to help agencies and politicians manage Michigan's forestlands.
- County commissioners and township board members want to help their communities grow economically, but they also want to make sure any expansion doesn't compromise the quality of life for them or for their children. Researchers Eckhart Dersch and Gerhard Schultink are working with local decision makers to educate them about the value of wetlands and helping them evaluate the best options for their areas.
- For decades it was thought that the Great Lakes contained an inexhaustible supply of fish and fresh water. Then, in 1969, the Cuyahoga River caught on fire. Dead fish were washing up on the shore of Lake Erie, and the other lakes were filled with alewives and choked with weeds and pollution. Fisheries sci-



tist Jim Bence is just one of a cadre of researchers from eight states, one Canadian province and several Native American tribal governments who are working to rehabilitate the Great Lakes to meet the needs of people and wildlife.

The work profiled in this issue is just a fraction of the work that is going on across the MAES in this area. As Richard Harwood, holder of the C.S. Mott Chair for Sustainable Agriculture, has said, "It's important for people to know that there is not just one sustainable agriculture 'program' at Michigan State University that includes some projects and excludes others." Expanding that thought, it's fair to say that biological integration and sustainability are threads that weave through almost every MAES project — the subjects are not the purview of one discipline or department.



## Spring/Summer 1998 Vol. 16, Nos. 1 and 2 Social and Behavioral Science Research: Focusing on the Human Dimension

The Michigan Agricultural Experiment Station funds researchers in five colleges, including the College of Social Science, but the word "agricultural" makes many people think that much of the work revolves around increasing crop production or developing new livestock breeding techniques.

Rural families and communities and economic development have always been part of the MAES mission, but because research in these areas may take longer to show results, they tended to be overshadowed by dramatic production increases. Consider the time it takes to strengthen the economy of a rural area vs. producing a record alfalfa yield. It's not a question of one being more important than the other; it's just that production-oriented/enhancing research is easier to understand and the results have an immediate impact. With social and behavioral science research, the results take longer to surface and are more difficult to analyze.

For the past several years, bringing more attention to social and behavioral science research has been a focus of the MAES. Following a pattern of success established by coalitions created around Michigan's plant and animal industries, the MAES, MSU Extension (MSUE), the Office of the Provost and the Institute for Children, Youth and Families created the Coalition for Children, Youth, Families and Communities (CYFC) to give communities access to research results quickly and easily.

"For the past several years at MSU, we've seen a growing awareness of outreach scholarship in these areas," said Jan Bokemeier, assistant director of the MAES, sociology researcher and Coalition for CYFC co-director. "The need to strengthen the ties between research and extension started conversations and set the stage for this joint effort. With the involvement of the Institute for Children, Youth and Families and the encouragement of the provost, we committed to a university effort to accomplish these goals."

The Coalition for CYFC's other two co-directors are Marguerite Barratt, director of the Institute for Children, Youth and Families, and Cheri Booth, MSUE associate director.

The CYFC Coalition was created to stimulate, facilitate and coordinate MSU research and outreach efforts related to the health and well-being of children, youth and families; to support and develop the capacity of Michigan communities to meet their own needs; and to encourage new directions in scholarship and new applications for problem solving.



This issue of *Futures* highlights just a portion of the work in these areas, including much collaborative work on social capital, understanding Latino issues in the state, community nutrition, population migration and public involvement in research agendas.

Former Michigan Agricultural College President Kenyon Butterfield said in 1917, "In our investigations we still stress too much the goal of increased productivity as our great task. We still have too much faith in knowledge of the physical and biological facts and principles as all sufficing. There should be searching of heart as to our policies and programs. Are they adequate to the needs of the new epoch?"

The same question could be asked today and still be pertinent. Research in the social and behavioral sciences is helping to answer this and other questions at the intersection of science and society.

# *MAES Contributors*

July 1, 1997 to June 30, 1998

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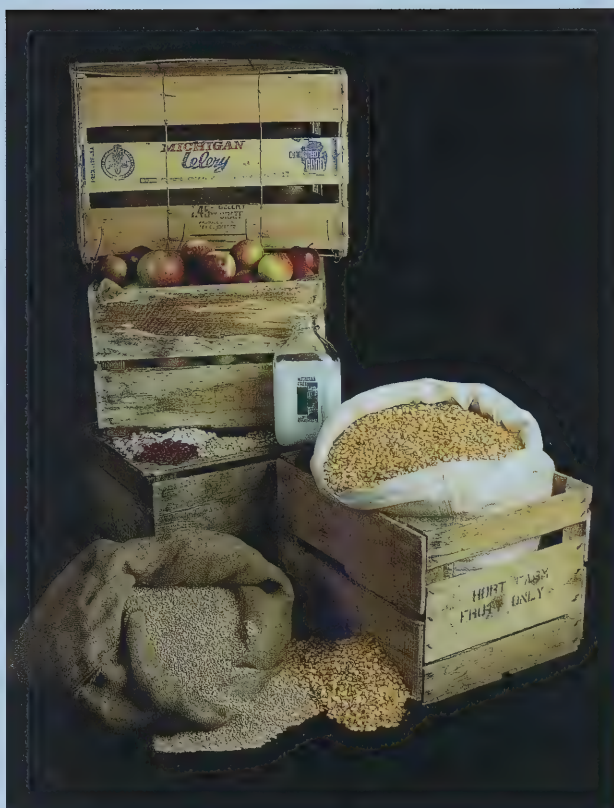


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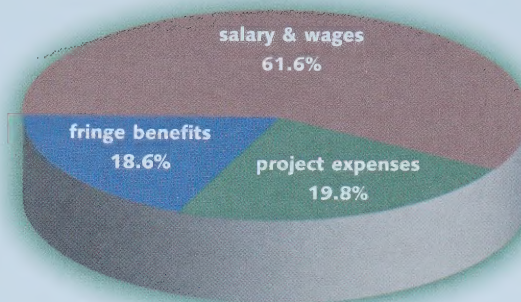
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# Financial Report

July 1, 1997 to June 30, 1998

## DISTRIBUTION OF APPROPRIATED FUNDS



## INCOME:

**\$63,714,189**

**Federal Appropriations** .....\$4,849,619

Hatch \$ 3,678,353

McIntire-Stennis \$ 191,351

Hatch RRF \$ 912,627

Hatch Animal and Disease, Section 1433 \$ 67,288

**State Appropriations** .....\$29,681,275

**TOTAL APPROPRIATIONS:** .....\$34,530,894

**Grants — Federal, State and Private** .....\$29,183,295

## EXPENSES:

**\$63,714,189**

Salaries \$21,283,509

Fringe Benefits \$ 6,417,155

Project Expenses \$ 6,830,230

Grants — Federal, State and Private\* \$29,183,295

## Personnel

(Full-time Equivalents Funded From Appropriated Funds)

**Research Staff\*\*** **151.73**

Professors 75.45

Associate Professors 30.45

Assistant Professors 22.58

Research Associates and Specialists 23.25

**Support Staff** **156.36**

Administrative Professionals 74.08

Supervisors 24.32

Clerical 46.51

Technicians 11.45

\* Grants are reported using most recent five-year average

\*\* Does not include department chairpersons/unit administrators





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**MICHIGAN AGRICULTURAL EXPERIMENT STATION**

**J. Ian Gray, Director**

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Michigan State University

East Lansing, Michigan 48824-1039

**MICHIGAN STATE  
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**SR-102, March 1999**

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